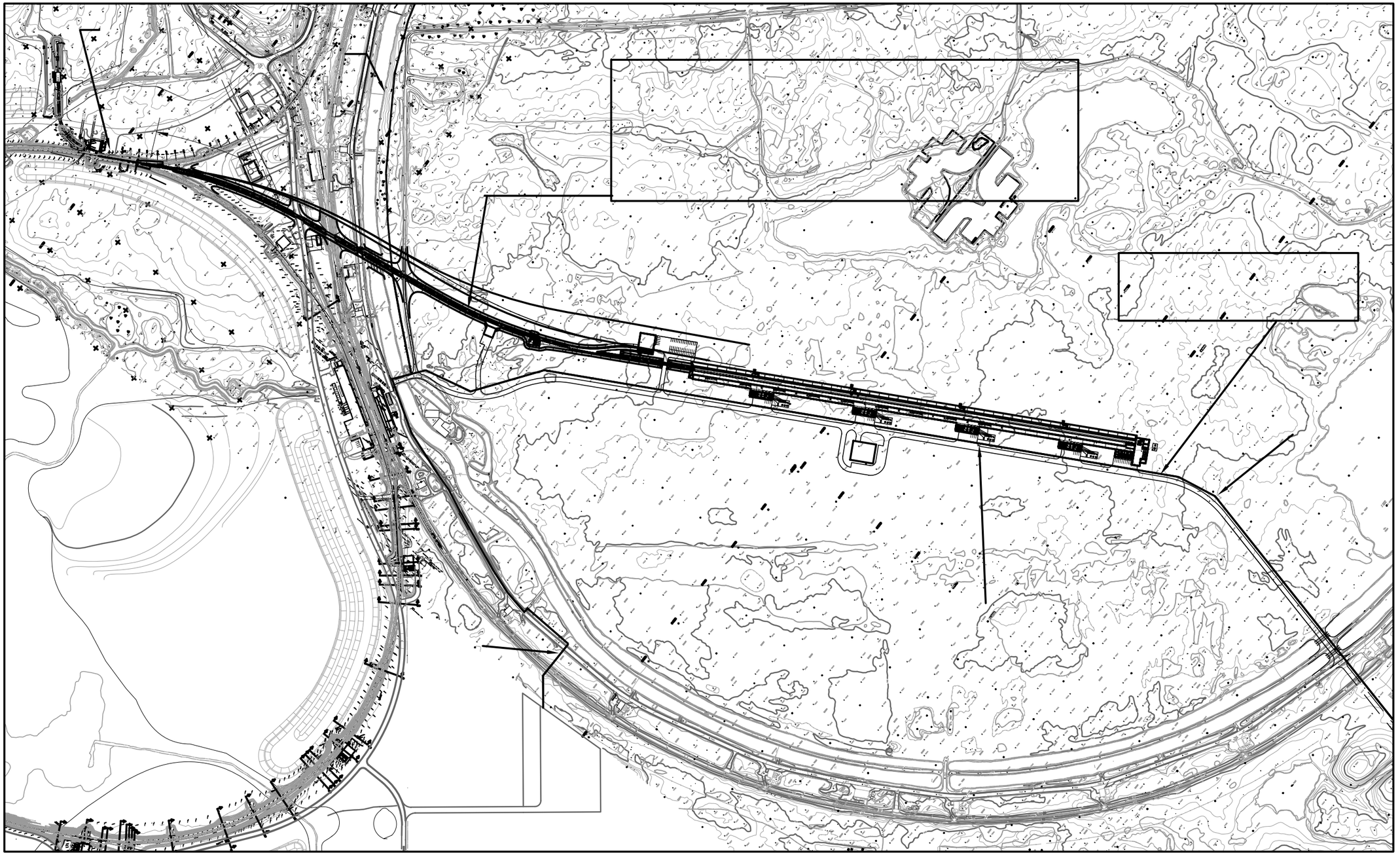


1" = 500'-0"

500 0 500 1000

SCALE FEET

FERMI NATIONAL ACCELERATOR LABORATORY

PROTON DRIVER

PROJECT OVERVIEW

PROJECT OVERVIEW SITE PLAN

PROJ. NO. 4-2-1

DATE: 20 JAN, 2006

DRWG. NO. PO-1

3 BAY SPARE MODULE
180 FEET LONG
1 INITIAL OR 3 ULTIMATE

TYPICAL 3 BAY MODULE
180 FEET LONG
SEE ENLARGED PLAN BELOW FOR INITIAL AND ULTIMATE CONFIGURATIONS

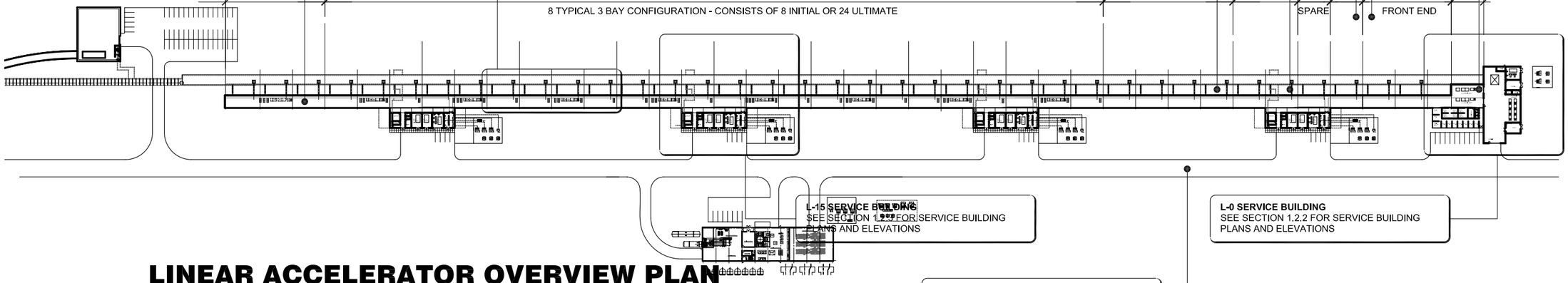
2 BAY .60 (2)
EQUIPMENT IN THE AREA TO BE DETERMINED VIA FURTHER STUDY IN CDR PHASE

4 BAY .80 (3)
EQUIPMENT IN THE AREA TO BE DETERMINED VIA FURTHER STUDY IN CDR PHASE

1 BAY .47 (1)
EQUIPMENT IN THE AREA TO BE DETERMINED VIA FURTHER STUDY IN CDR PHASE

3 BAY FRONT END
EQUIPMENT IN THE AREA TO BE DETERMINED VIA FURTHER STUDY IN CDR PHASE

1 BAY TEST AREA
EQUIPMENT SIMILAR TO TYPICAL BAY



L-15 SERVICE BUILDING
SEE SECTION 1.2.2 FOR SERVICE BUILDING PLANS AND ELEVATIONS

L-0 SERVICE BUILDING
SEE SECTION 1.2.2 FOR SERVICE BUILDING PLANS AND ELEVATIONS

ACCESS ROAD

LINEAR ACCELERATOR OVERVIEW PLAN

SCALE 1"=200'-0"

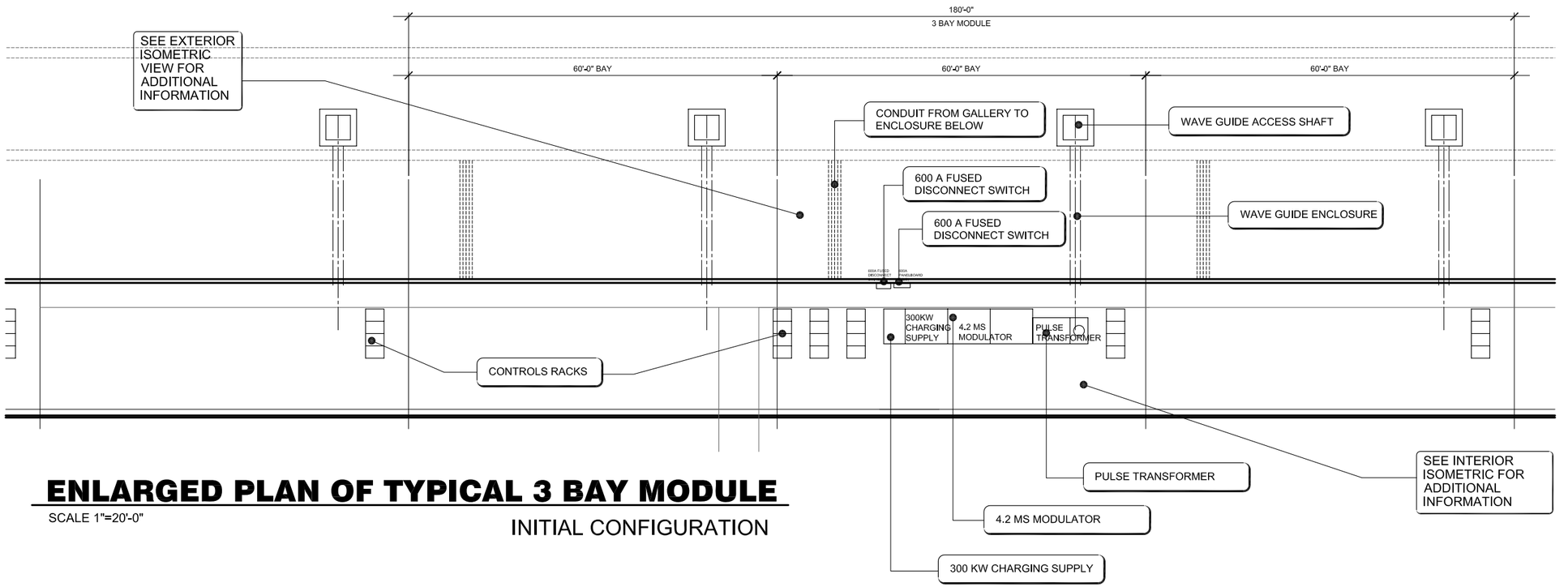
EXTERIOR VIEW LOOKING UPSTREAM

FERMI NATIONAL ACCELERATOR LABORATORY

PROTON DRIVER
KLYSTRON GALLERY

KLYSTRON GALLERY OVERVIEW PLAN

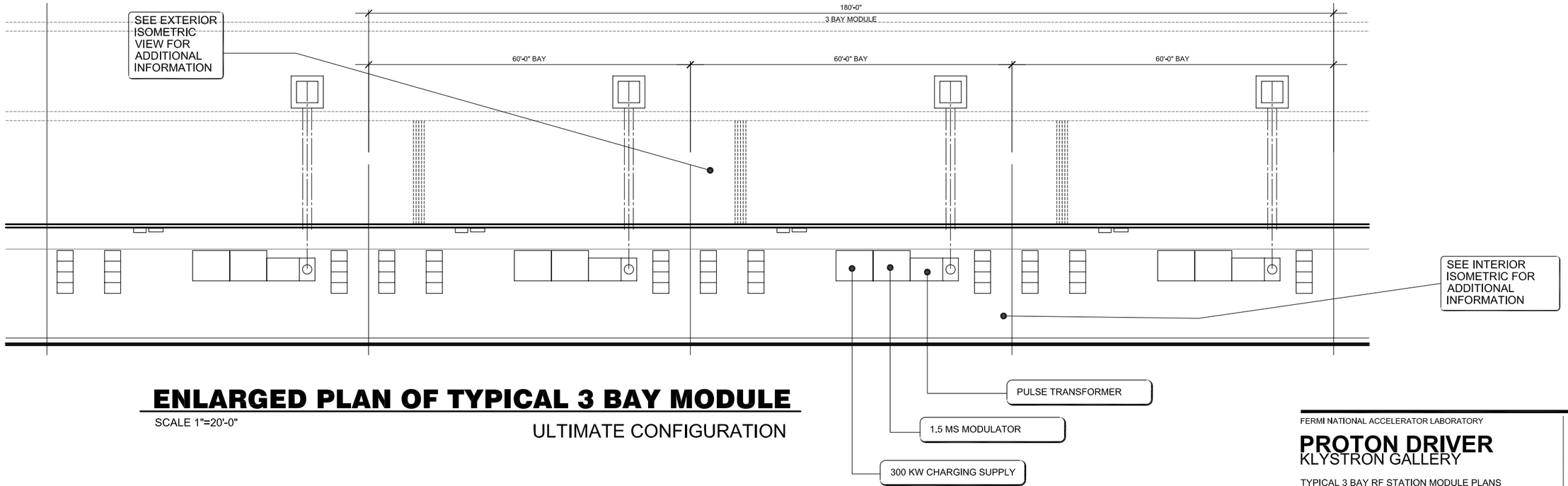
PROJ. NO. 4-2-1
DATE: 20 JAN, 2006
DRWG. NO. KG-1



ENLARGED PLAN OF TYPICAL 3 BAY MODULE

SCALE 1"=20'-0"

INITIAL CONFIGURATION



ENLARGED PLAN OF TYPICAL 3 BAY MODULE

SCALE 1"=20'-0"

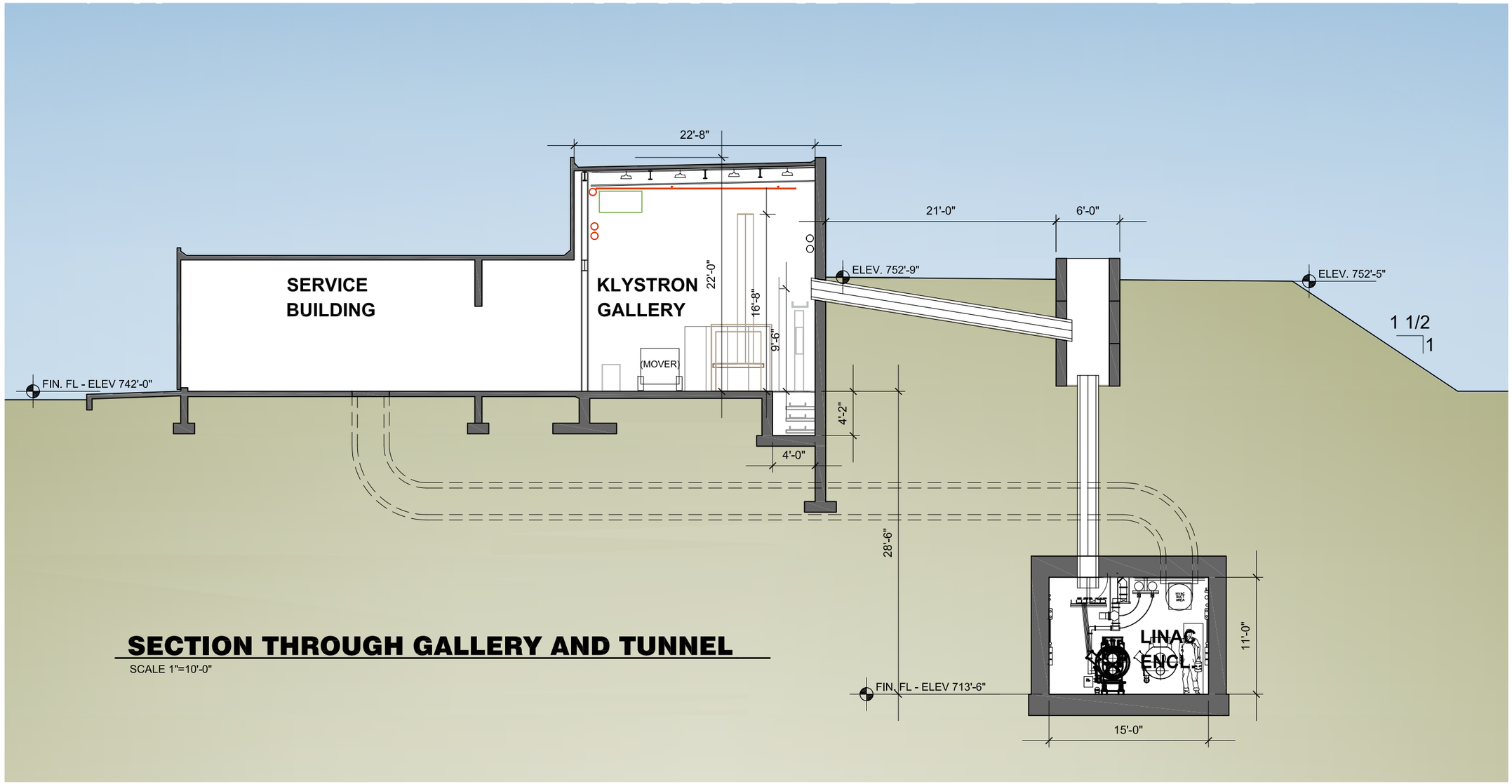
ULTIMATE CONFIGURATION

FERMI NATIONAL ACCELERATOR LABORATORY

PROTON DRIVER
KLYSTRON GALLERY

TYPICAL 3 BAY RF STATION MODULE PLANS

PROJ. NO. 4-2-1
DATE: 20 JAN, 2006
DRWG. NO. KG-2



SECTION THROUGH GALLERY AND TUNNEL

SCALE 1"=10'-0"

NOTE
TYPICAL NOTATIONS

1" = 10'-0"

10 0 10 20
SCALE FEET

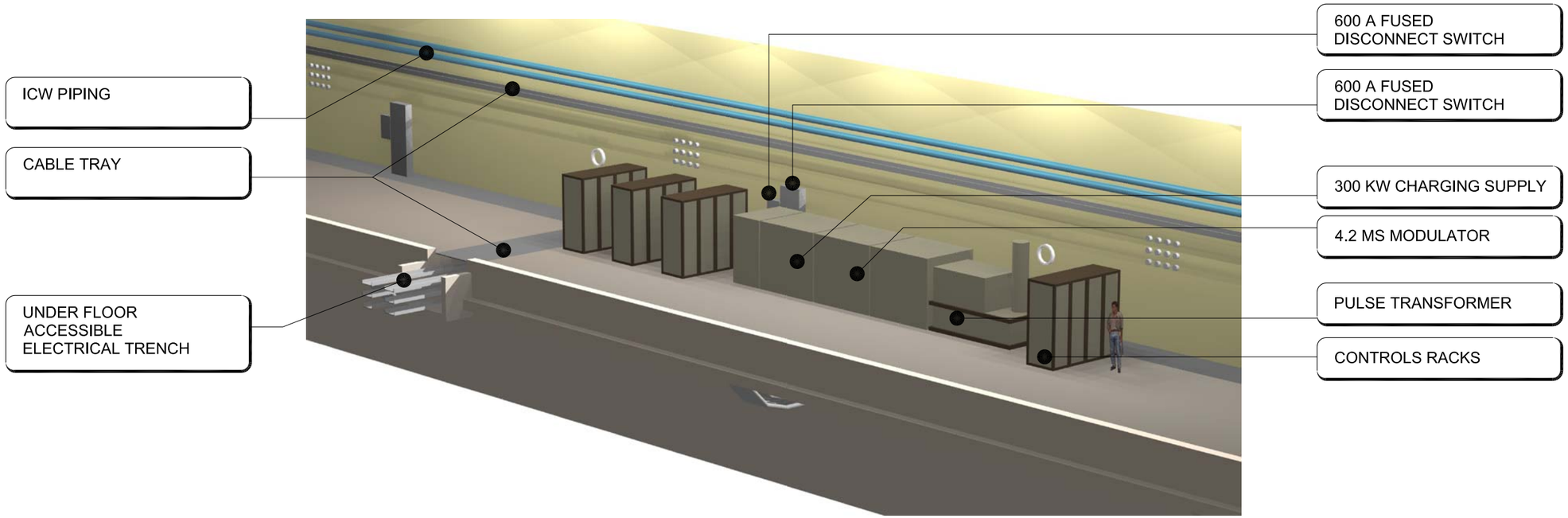
FERMI NATIONAL ACCELERATOR LABORATORY

PROTON DRIVER

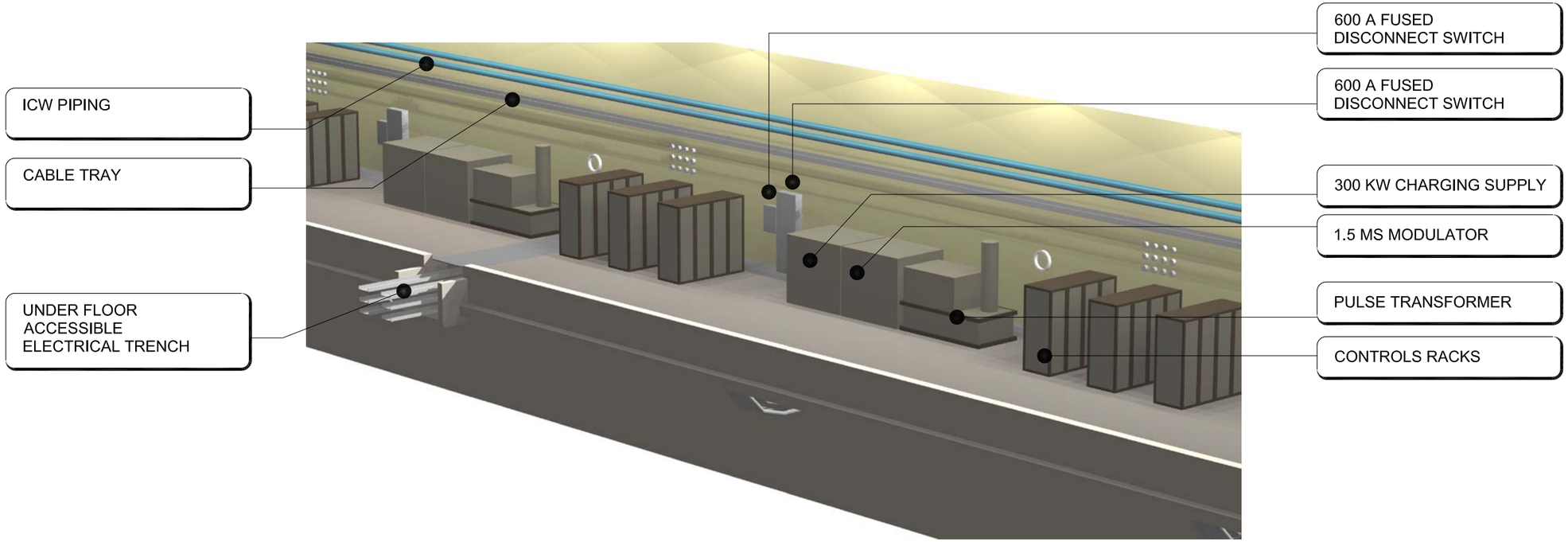
KLYSTRON GALLERY

TYPICAL SECTION THROUGH GALLERY
AND ENCLOSURE

PROJ. NO. 4-2-1
DATE: 20 JAN, 2006
DRWG. NO. KG-3



ISOMETRIC VIEW OF INITIAL CONFIGURATION



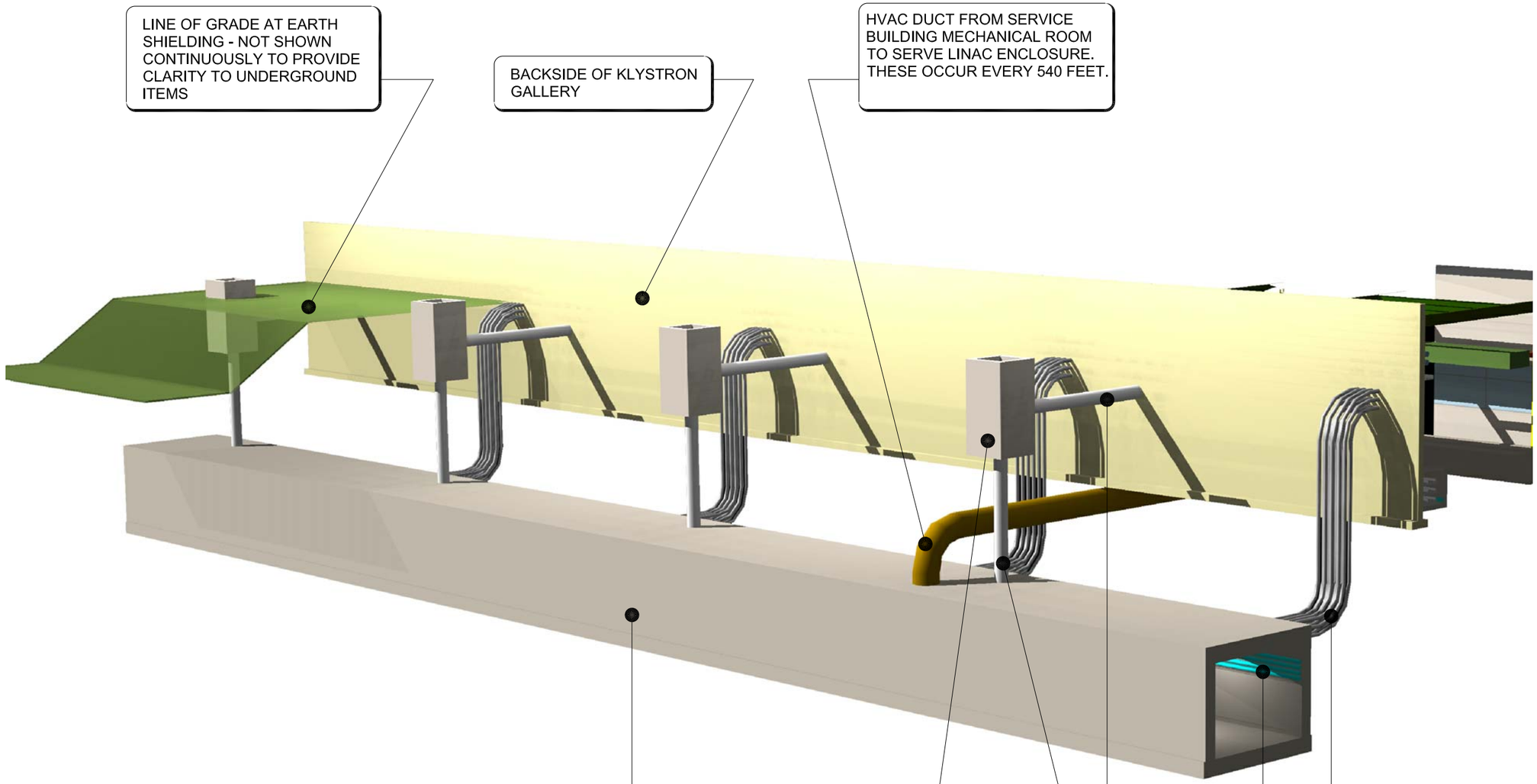
ISOMETRIC VIEW OF ULTIMATE CONFIGURATION

FERMI NATIONAL ACCELERATOR LABORATORY

PROTON DRIVER
KLYSTRON GALLERY

ISOMETRIC OF INITIAL AND ULTIMATE CONFIGURATIONS

PROJ. NO. 4-2-1
DATE: 20 JAN, 2006
DRWG. NO. KG-4



VIEW FROM TUNNEL SIDE OF GALLERY

FERMI NATIONAL ACCELERATOR LABORATORY

PROTON DRIVER

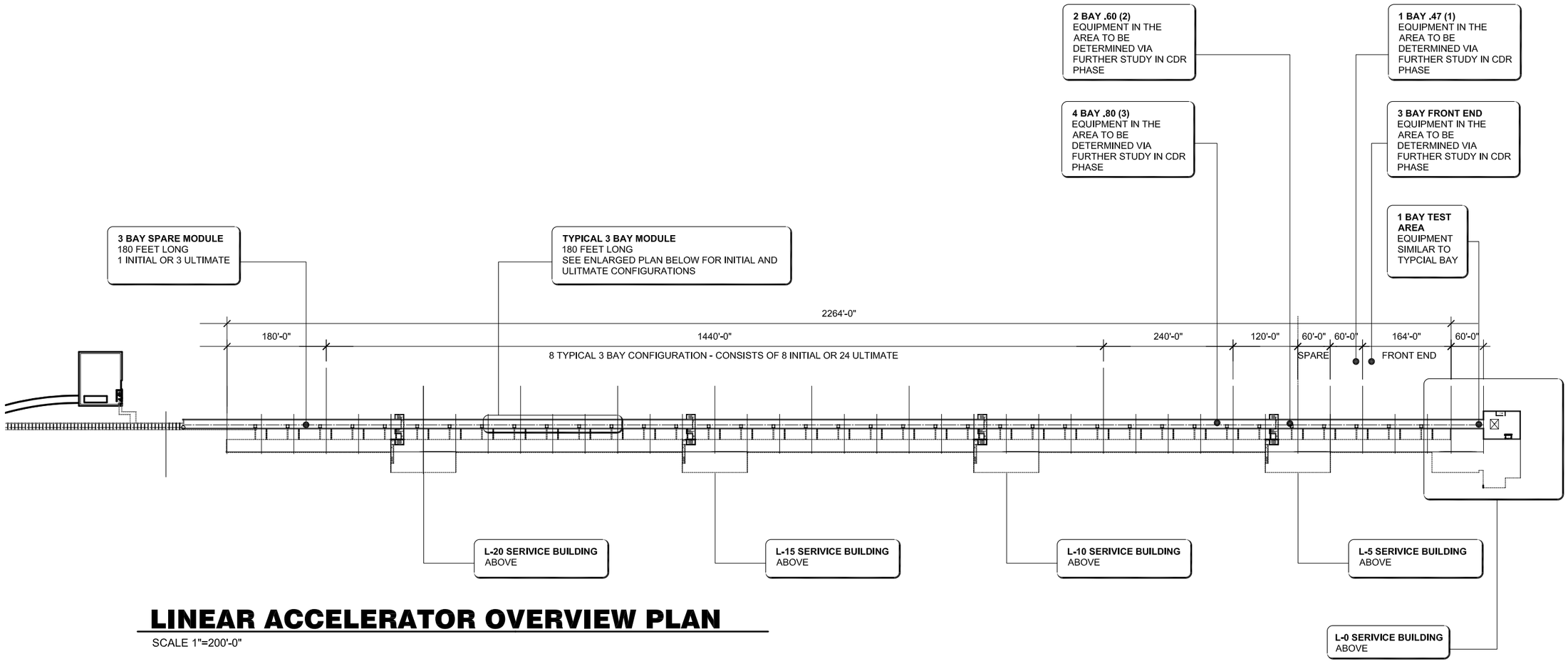
KLYSTRON GALLERY

ISOMETRIC OF GALLERY TO ENCLOSURE CONNECTIONS

PROJ. NO. 4-2-1

DATE: 20 JAN, 2006

DRWG. NO. KG-5



LINEAR ACCELERATOR OVERVIEW PLAN

SCALE 1"=200'-0"

FERMI NATIONAL ACCELERATOR LABORATORY

PROTON DRIVER

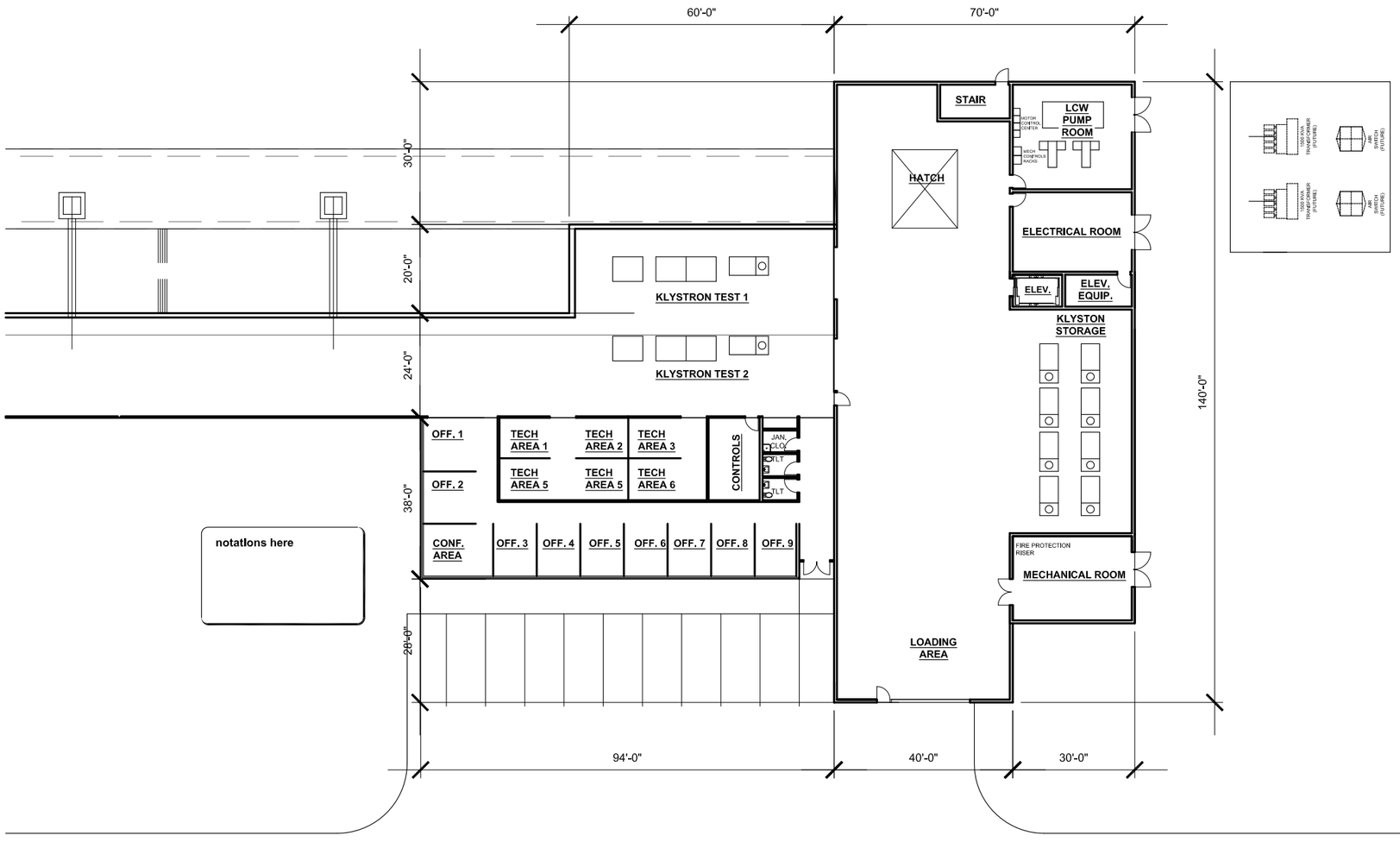
LINAC ENCLOSURE

KEY PLAN OF LINAC ENCLOSURE

PROJ. NO. 4-2-1

DATE: 20 JAN, 2006

DRWG. NO. LE-1



L-0 UPSTREAM SERVICE BUILDING

FUNCTION:
PERSONNEL/EQUIPMENT ACCESS FOR INSTALLATION AND OPERATION OF LOW ENERGY SUPPORT EQUIPMENT AND TECH SPACE

CONTENTS:
ELECTRICAL EQUIPMENT AND CONTROLS, UTILITY SERVICES AND H-MINUS SOURCE SUPPORT EQUIPMENT

DIMENSIONS:
LOW BAY 60' X 125' X 10' HIGH
TECH SPACE AND COMMON AREA

TUNNEL LEVEL30' X 125' X 28'-6" HIGHW/ ELEVATOR

CONSTRUCTION:
NON-COMBUSTIBLE, INSULATED METAL SIDING ON STEEL FRAME W/ BUILT UP ROOF AND CONCRETE FLOORS

L-0 SITE PLAN

SCALE 1"= 30'-0"

1" = 30'-0"

30 0 30 60
SCALE FEET

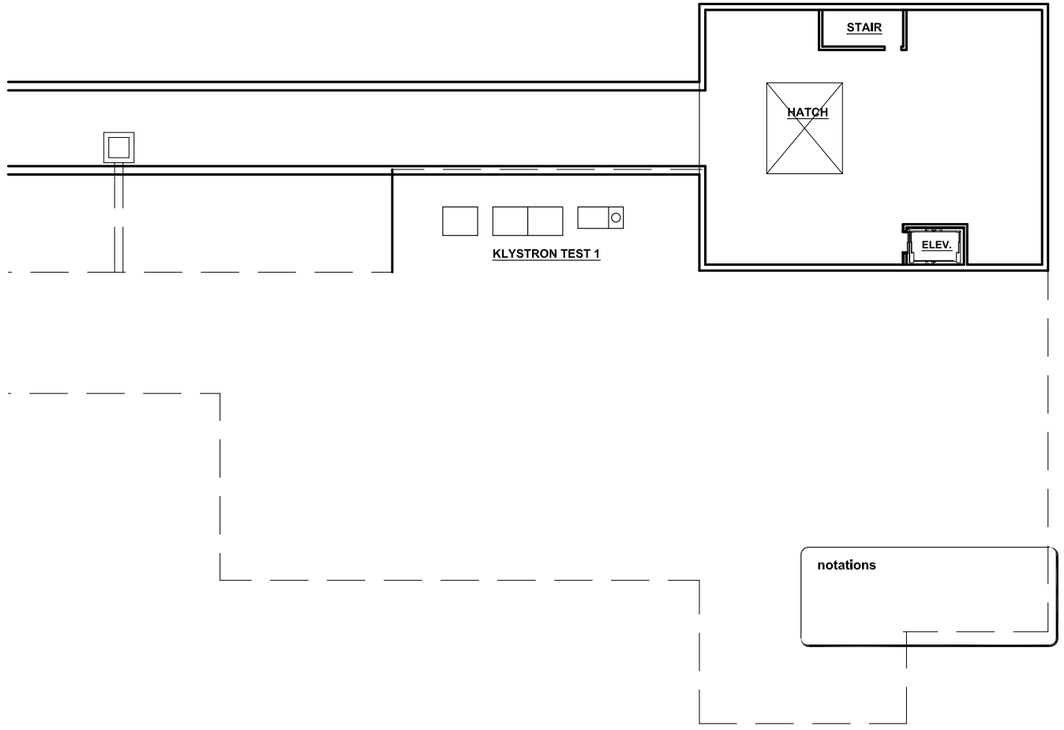
FERMI NATIONAL ACCELERATOR LABORATORY

PROTON DRIVER

L-0 SERVICE BUILDING

SITE PLAN / GRADE LEVEL BUILDING PLAN

PROJ. NO. 4-2-1
DATE: 20 JAN, 2006
DRWG. NO. L0-1



L-0 SERVICE BUILDING BELOW GRADE FLOOR PLAN

SCALE 1/16" = 1'-0"

1" = 30'-0"

30 0 30 60

SCALE FEET

FERMI NATIONAL ACCELERATOR LABORATORY

PROTON DRIVER

L-O SERVICE BUILDING

BELOW GRADE FLOOR PLAN AND EXTERIOR VIEW

PROJ. NO. 4-2-1

DATE: 20 JAN, 2006

DRWG. NO. L0-2

TYPICAL NOTATION

PLACE INFORMATION HERE

600A FUSED DISC. SW.

600A PANELBOARD (MLO)

300KW CHARGING SUPPLY

4.2 MS MODULATOR

PULSE TRANSFORMER

600A FUSED DISC. SW.

600A PANELBOARD (MLO)

300KW CHARGING SUPPLY

4.2 MS MODULATOR

PULSE TRANSFORMER

STAIR

Q ROOM

STORAGE

TLT

JC

FP RISER

MECHANICAL RM. (SERVES LINAC ENCLOSURE)

MECHANICAL RM. (SERVES KLYSTRON GALLERY)

MECH CONTROLS RACKS

MOTOR CONTROL CENTER

LCW PUMP ROOM

225A PANEL

100A LIGHTING PANEL

75KVA TRANS.

225A 3P/208V FP

EPP

45KVA ETR

EPHP

ELECTRICAL ROOM

(8) 5" COMM DUCTS

1200A 480/277V 3PP

2000A SWBD

2000A SWBD (FUT)

2000A SWBD (FUT)

2000A SWBD

100 KW GENERATOR

1500 KVA TRANSFORMER (FUTURE)

1500 KVA TRANSFORMER (FUTURE)

1500 KVA TRANSFORMER (MACHINE)

750 KVA TRANSFORMER (CONVENTIONAL)

AIR SWITCH (FUTURE)

AIR SWITCH

AIR SWITCH

TYPICAL SERVICE BUILDING SITE PLAN

SCALE 1"= 30'-0"

1" = 20'-0"

20 0 20 40

SCALE FEET

FERMI NATIONAL ACCELERATOR LABORATORY

PROTON DRIVER

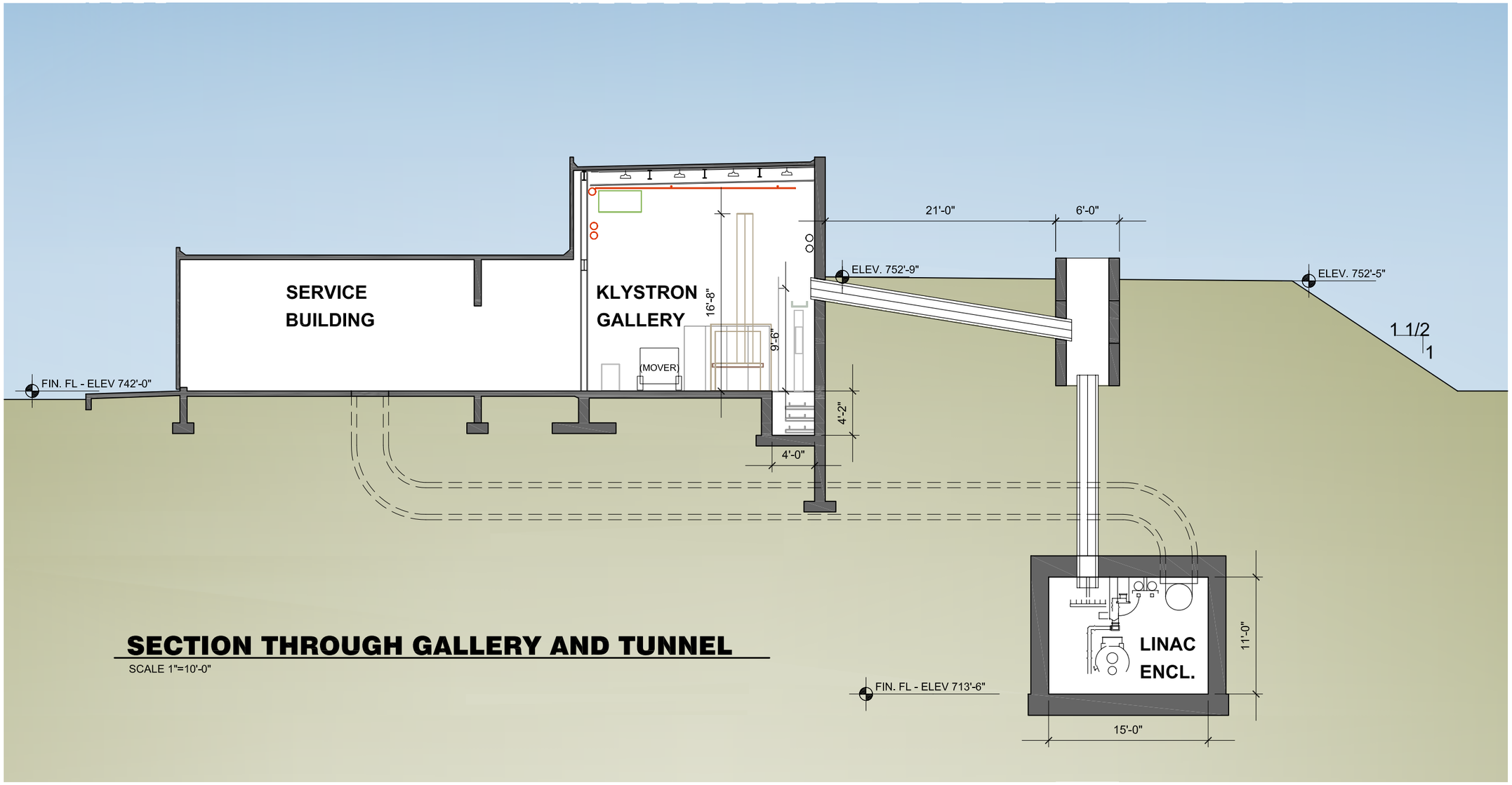
L-5 TO L-25 SERVICE BUILDINGS

TYPICAL SITE PLAN / GRADE LEVEL FLOOR PLAN

PROJ. NO. 4-2-1

DATE: 20 JAN, 2006

DRWG. NO. SB-1



SECTION THROUGH GALLERY AND TUNNEL

SCALE 1"=10'-0"

NOTE
TYPICAL NOTATION INFORMATION

1" = 10'-0"

10 0 10 20
SCALE FEET

FERMI NATIONAL ACCELERATOR LABORATORY

PROTON DRIVER

L-5, L-10, L-25, L-20

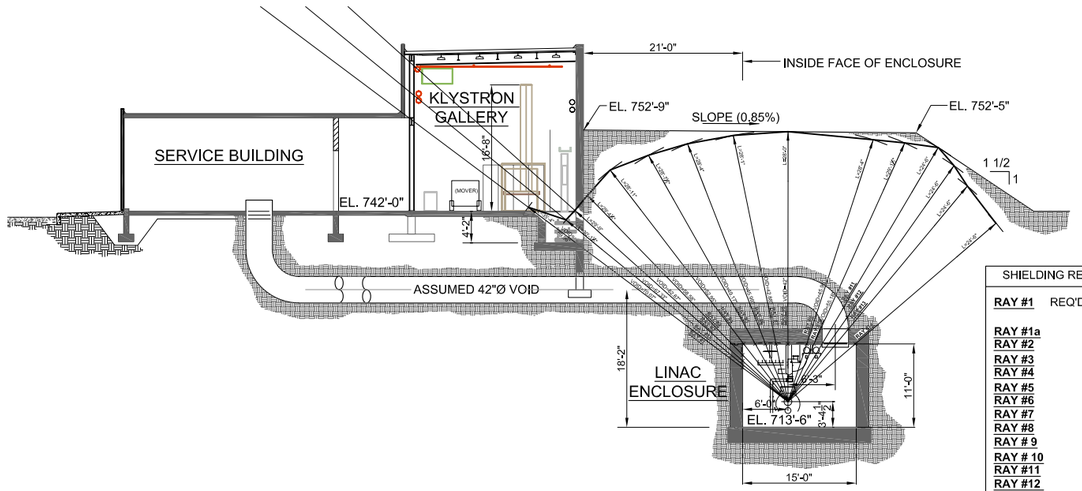
SERVICE BUILDINGS

TYPICAL SERVICE BUILDING / GALLERY/ ENCLOSURE CROSS SECTION

PROJ. NO. 4-2-1

DATE: 20 JAN, 2006

DRWG. NO. SB-2

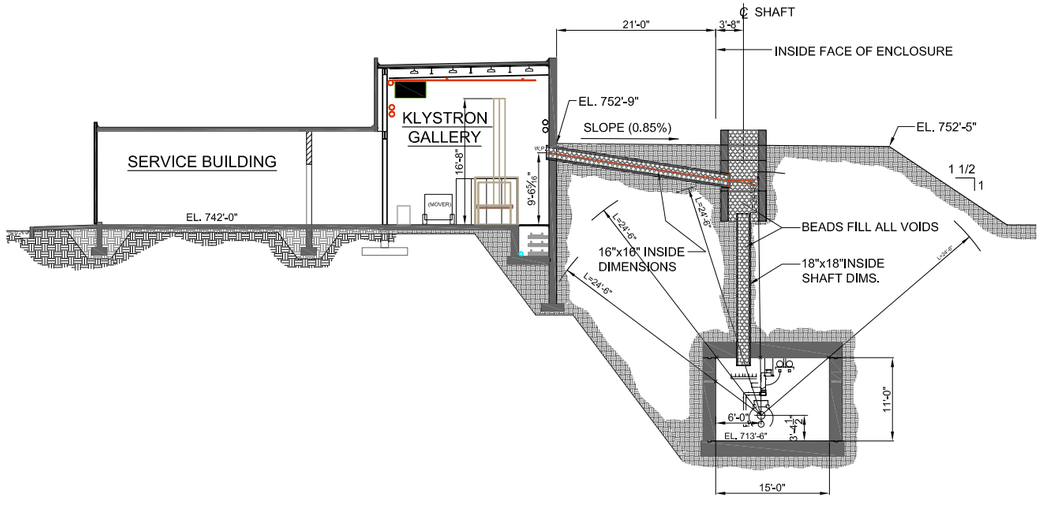


TRANSVERSE SECTION @ MECHANICAL DUCT

SCALE: 1/4" = 1'-0"

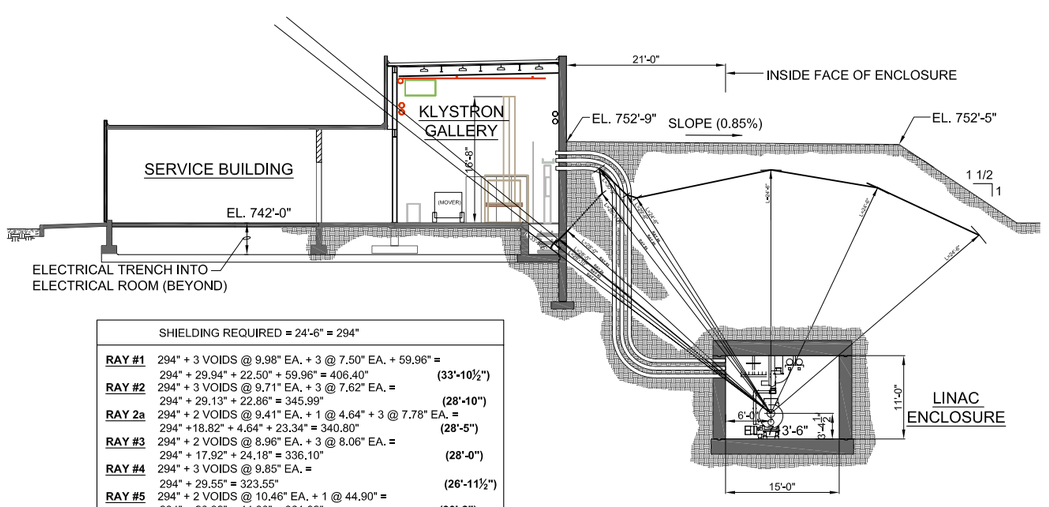
NOTES

SHIELDING REQUIRED = 24'-6" = 294"		
RAY #1	REQ'D L = 294" + 70.07" +59.96" = 424.03"	**(35'-4")**
RAY #1a	= 294" + 67.33" = 361.33"	**(30'-1 ½")**
RAY #2	= 294" + 62.87" = 356.87"	**(29'-9")**
RAY #3	= 294" + 58.58" = 352.58"	**(29'-4 ½")**
RAY #4	= 294" + 52.95" = 346.95"	**(28'-11")**
RAY #5	= 294" + 49.17" = 343.17"	**(28'-7 ½")**
RAY #6	= 294" + 45.99" = 339.99"	**(28'-4")**
RAY #7	= 294" + 42.88" = 336.88"	**(28'-1")**
RAY #8	= 294" + 42" = 336"	**(28'-0")**
RAY # 9	= 294" + 45.96" = 339.96"	**(28'-4")**
RAY # 10	= 294" + 55.18" = 349.18"	**(29'-1 ½")**
RAY #11	= 294"	**(24'-6")**
RAY #12	= 294"	**(24'-6")**
RAY # 13	= 294"	**(24'-6")**
RAY # 14	= 294"	**(24'-6")**



TRANSVERSE SECTION @ WAVE GUIDE

SCALE: 1/4" = 1'-0"



SHIELDING REQUIRED = 24'-6" = 294"		
RAY #1	294" + 3 VOIDS @ 9.98" EA. + 3 @ 7.50" EA. + 59.96" = 294" + 29.94" + 22.50" + 59.96" = 406.40"	**(33'-10½")**
RAY #2	294" + 3 VOIDS @ 9.71" EA. + 3 @ 7.62" EA. = 294" + 29.13" + 22.86" = 345.99"	**(28'-10")**
RAY 2a	294" + 2 VOIDS @ 9.41" EA. + 1 @ 4.64" + 3 @ 7.78" EA. = 294" +18.82" + 4.64" + 23.34" = 340.80"	**(28'-5")**
RAY #3	294" + 2 VOIDS @ 8.96" EA. + 3 @ 8.06" EA. = 294" + 17.92" + 24.18" = 336.10"	**(28'-0")**
RAY #4	294" + 3 VOIDS @ 9.85" EA. = 294" + 29.55" = 323.55"	**(26'-11½")**
RAY #5	294" + 2 VOIDS @ 10.46" EA. + 1 @ 44.90" = 294" + 20.92" + 44.90" = 361.82"	**(30'-2")**
RAY #6	294" + 1 VOID @ 10.89" + 1 @ 50.95" = 355.84"	**(29'-8")**

TRANSVERSE SECTION @ ELECTRICAL PENETRATIONS

SCALE: 1/4" = 1'-0"

1" = 20'-0"

20 0 20 40

SCALE FEET

FERMI NATIONAL ACCELERATOR LABORATORY

PROTON DRIVER

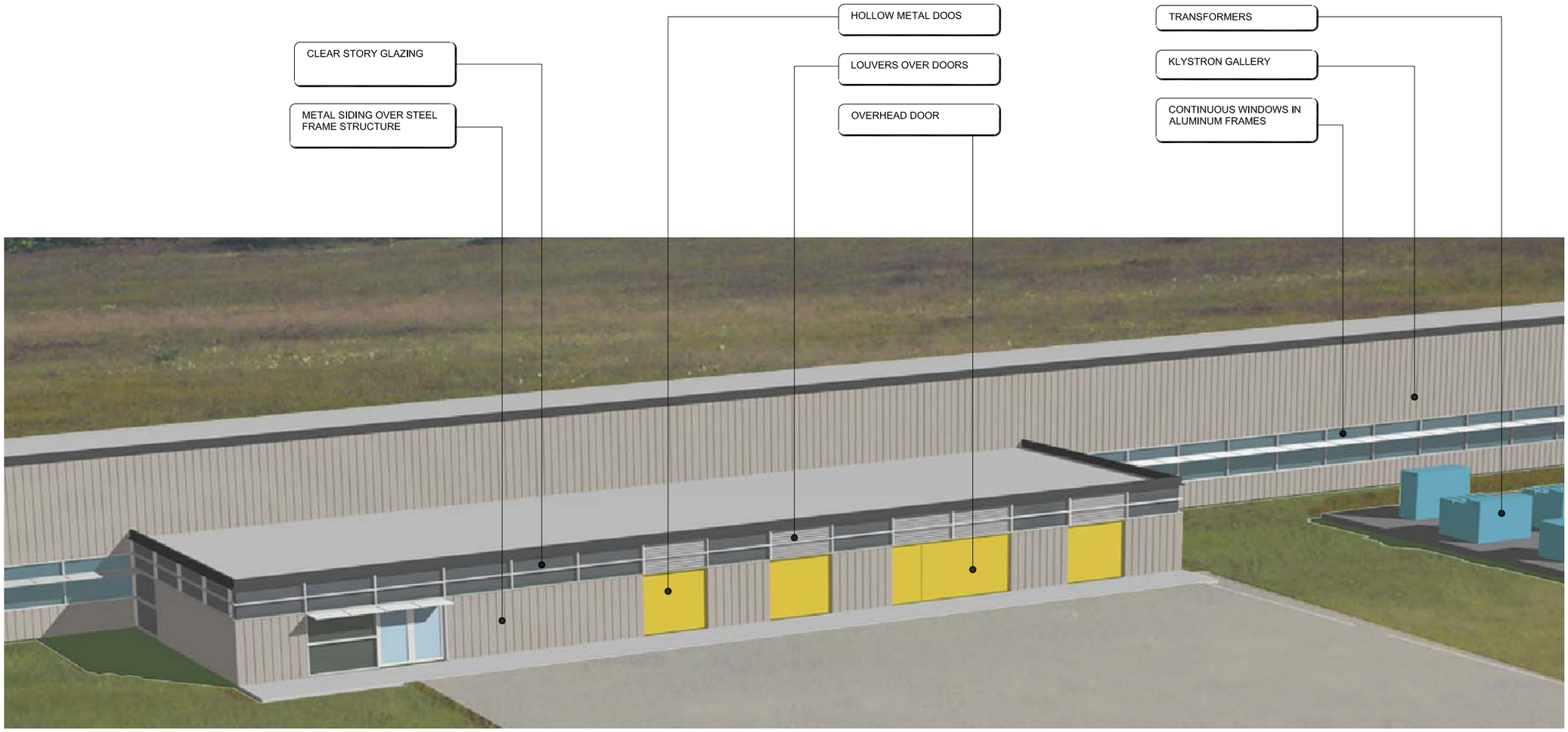
L-5 TO L-20 SERVICE BUILDINGS

SHIELDING SECTIONS

PROJ. NO. 4-2-1

DATE: 20 JAN, 2006

DRWG. NO. SB-3

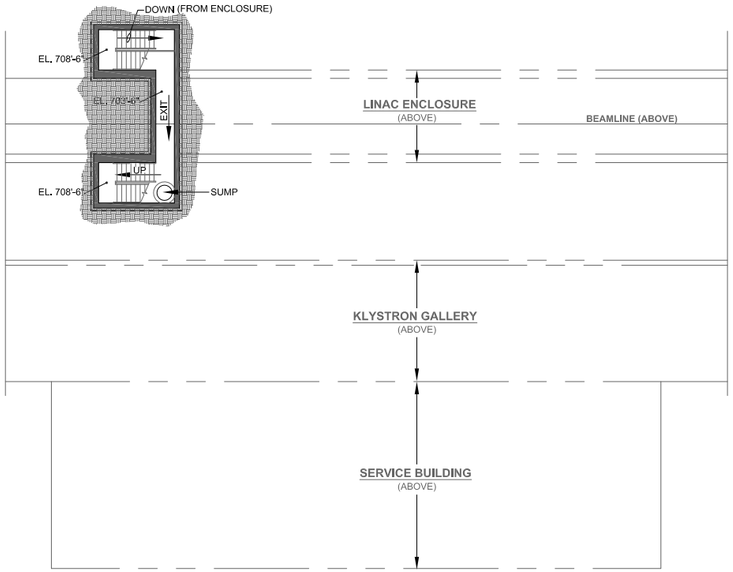


EXTERIOR VIEW OF SERVICE BUILDINGS

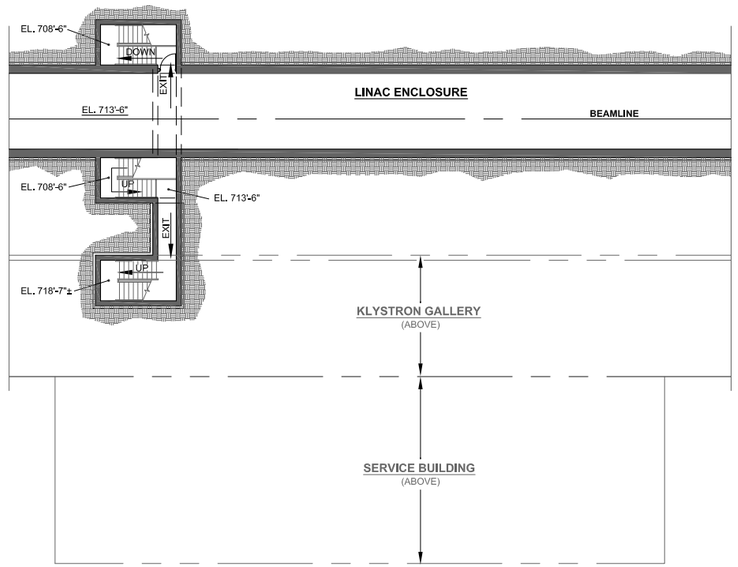
FERMI NATIONAL ACCELERATOR LABORATORY

PROTON DRIVER
L-5 TO L-20 SERVICE BUILDINGS
EXTERIOR VIEW OF TYPICAL SERVICE BUILDING

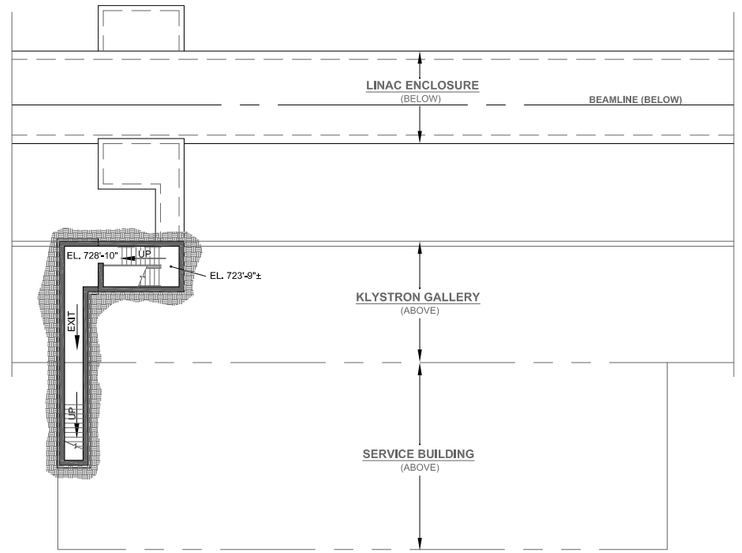
PROJ. NO. 4-2-1
DATE: 20 JAN, 2006
DRWG. NO. SB-4



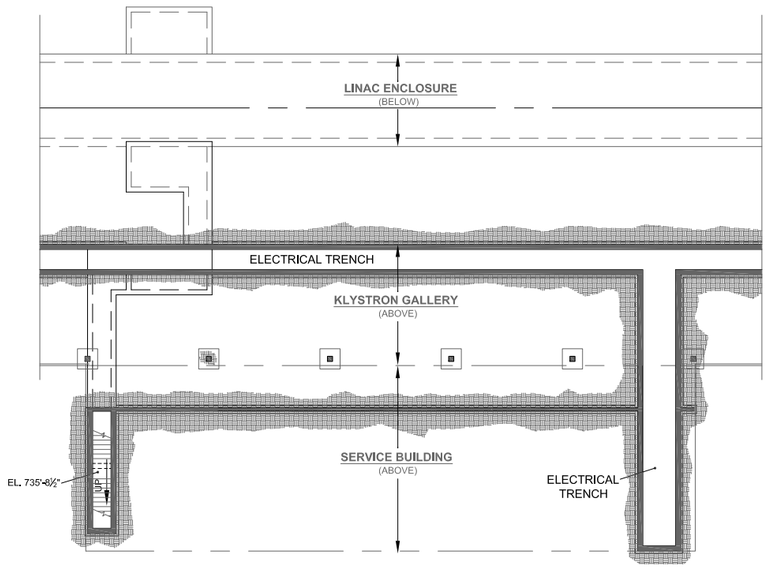
PLAN @ EL. 703'-6"



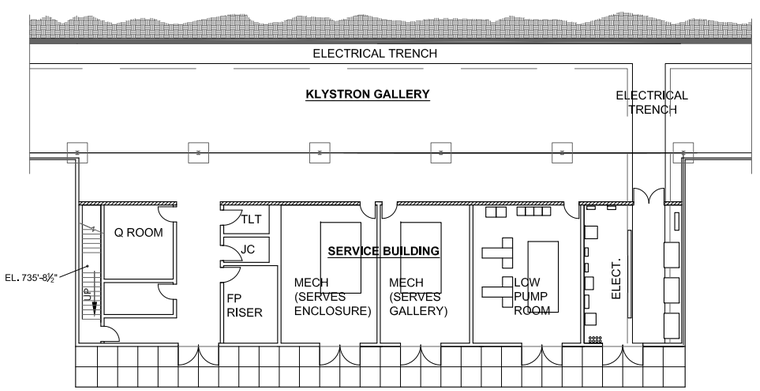
PLAN @ EL. 713'-6"



PLAN @ EL. 728'-10"



PLAN @ EL. 735'-8 1/2"



PLAN @ EL. 742'-0"

NOTATIONS

1" = 30'-0"

30 0 30 60

SCALE FEET

FERMI NATIONAL ACCELERATOR LABORATORY

PROTON DRIVER

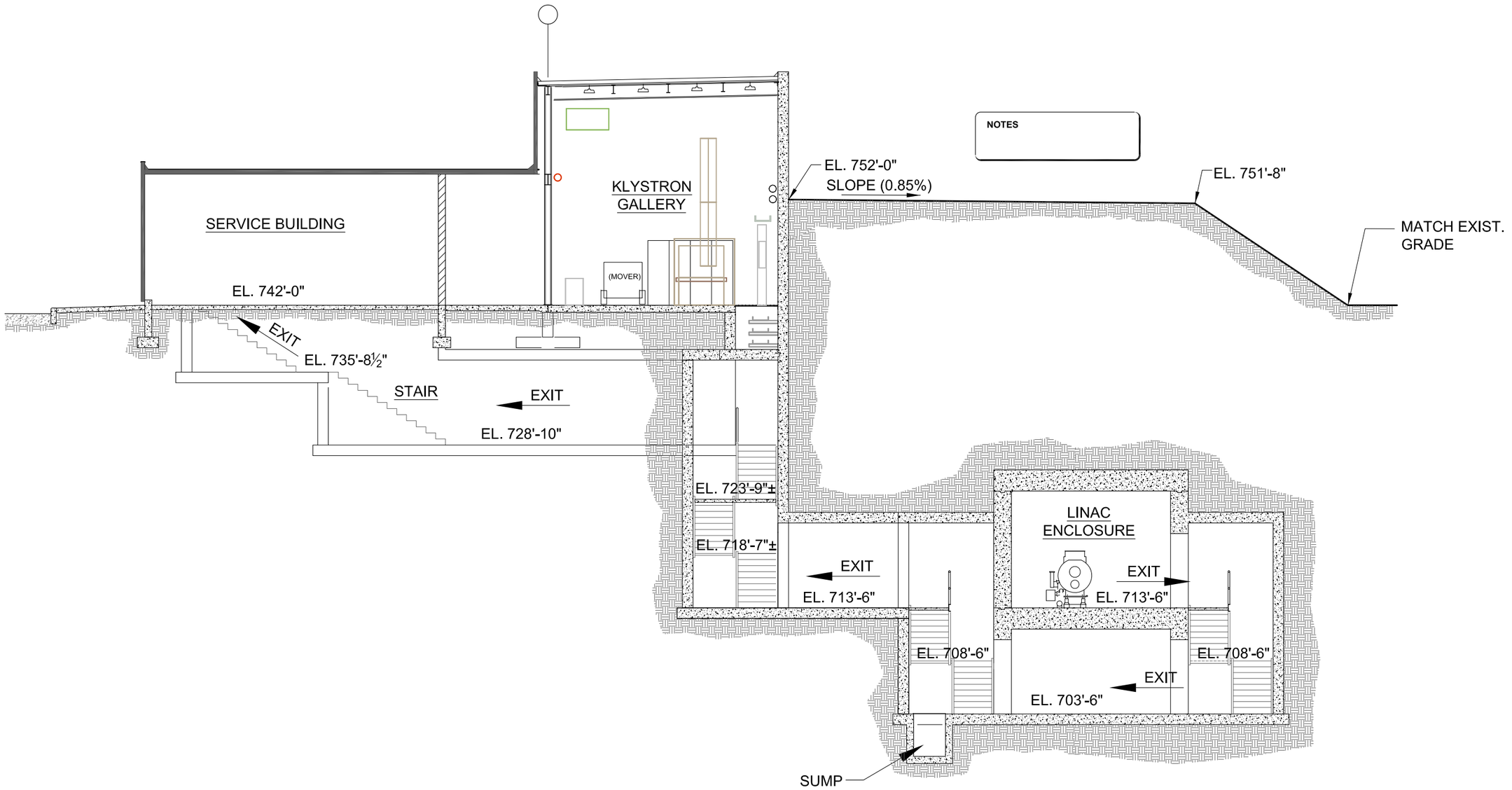
L-5 TO L-20 SERVICE BUILDINGS

SERVICE BUILDING / ENCLOSURE BELOW GRADE PLANS AND STAIR CONFIGURATIONS

PROJ. NO. 4-2-1

DATE: 20 JAN, 2006

DRWG. NO. SB-5



TRANSVERSE SECTION SHOWING EXIT STAIR FROM THE LINAC ENCLOSURE

1" = 10'-0"

10 0 10 20

SCALE FEET

FERMI NATIONAL ACCELERATOR LABORATORY

PROTON DRIVER

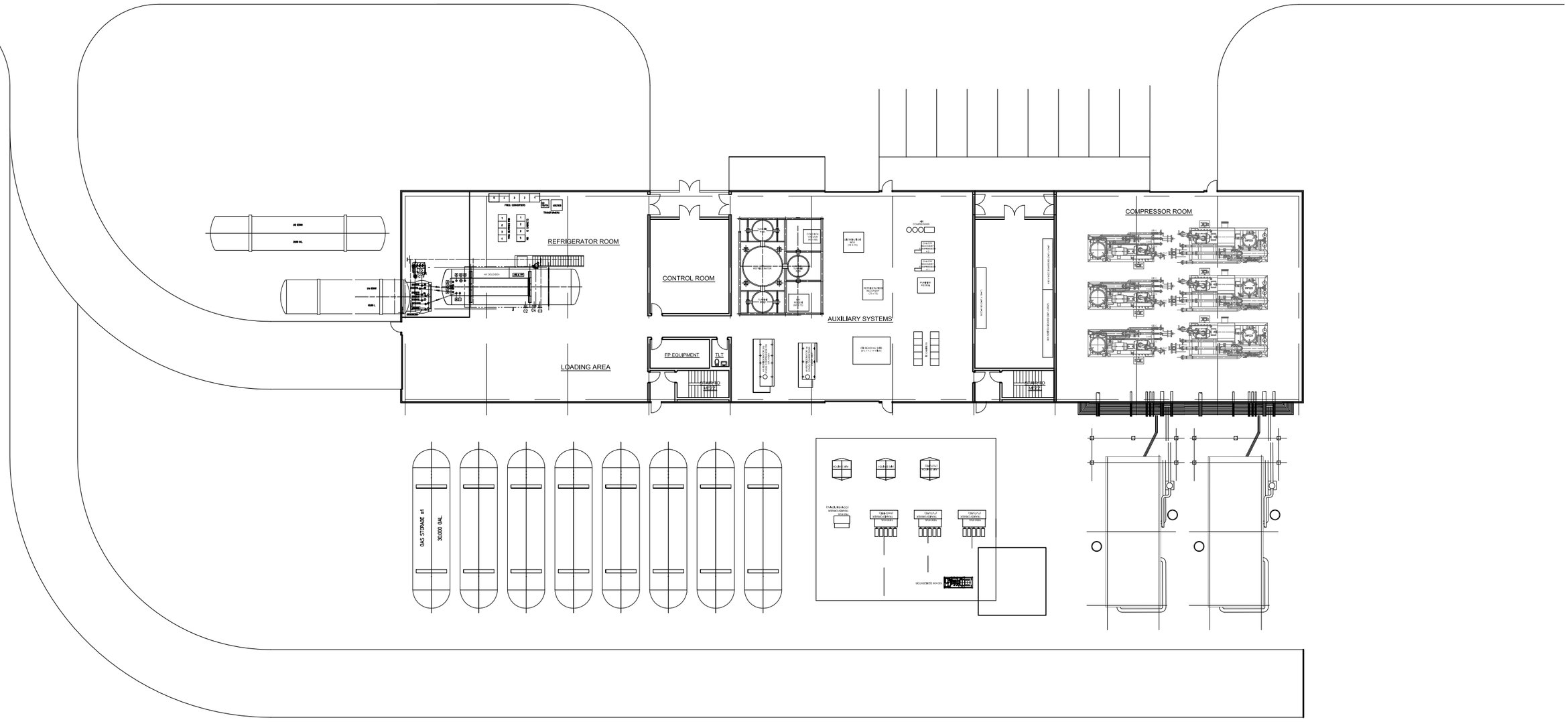
L-5 TO L-20 SERVICE BUILDINGS

SECTION THROUGH TYPICAL ENCLOSURE EXIT STAIR

PROJ. NO. 4-2-1

DATE: 20 JAN, 2006

DRWG. NO. SB-6



1" = 30'-0"

30 0 30 60

SCALE FEET

FERMI NATIONAL ACCELERATOR LABORATORY

PROTON DRIVER

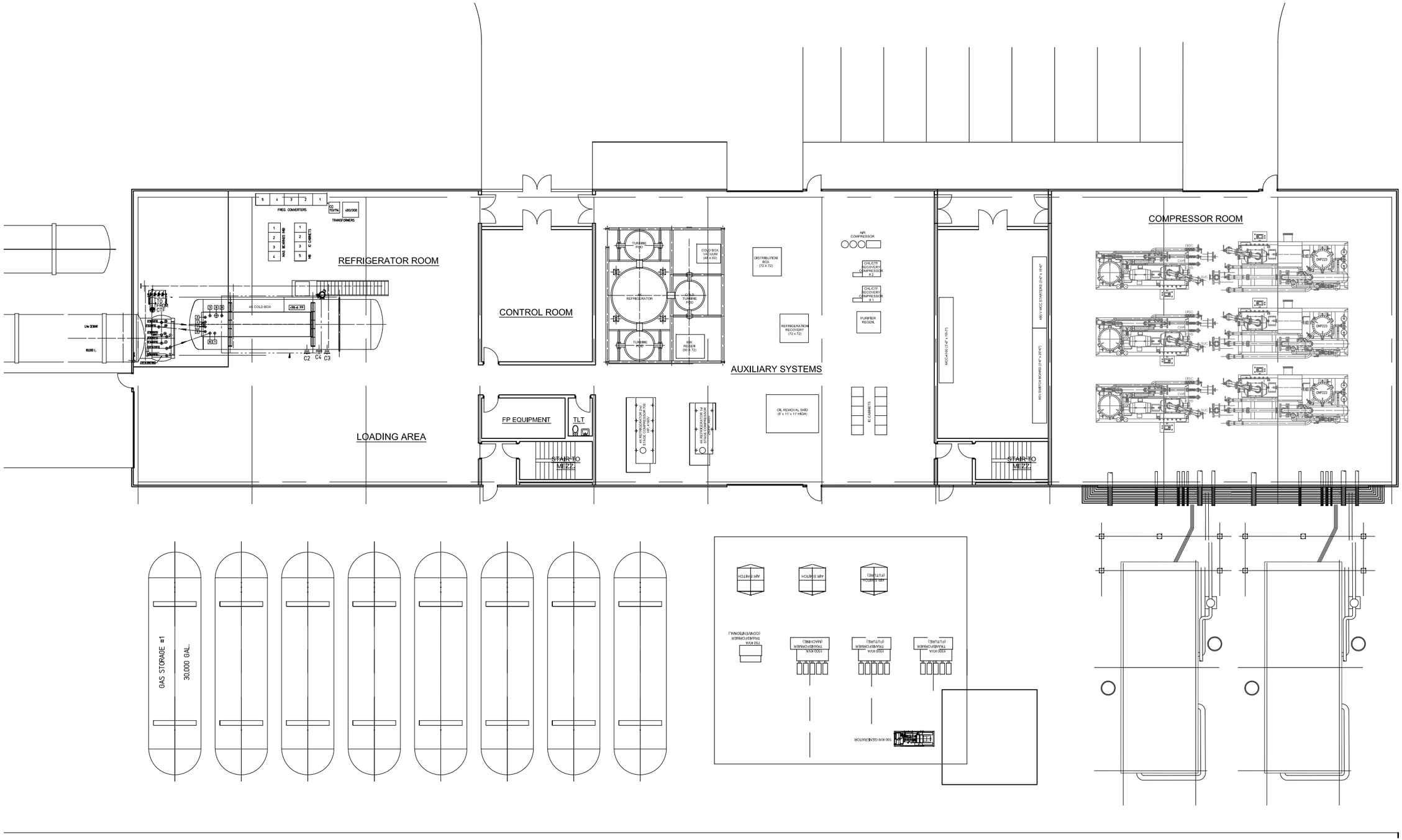
L-12 CRYO BUILDING

FLOOR PLAN

PROJ. NO. 4-2-1

DATE: 20 JAN, 2006

DRWG. NO. L12-1



FERMI NATIONAL ACCELERATOR LABORATORY

PROTON DRIVER

L-12 CRYO BUILDING

FLOOR PLAN

PROJ. NO. 4-2-1

DATE: 20 JAN, 2006

DRWG. NO. L12-2

FERMI NATIONAL ACCELERATOR LABORATORY

PROTON DRIVER

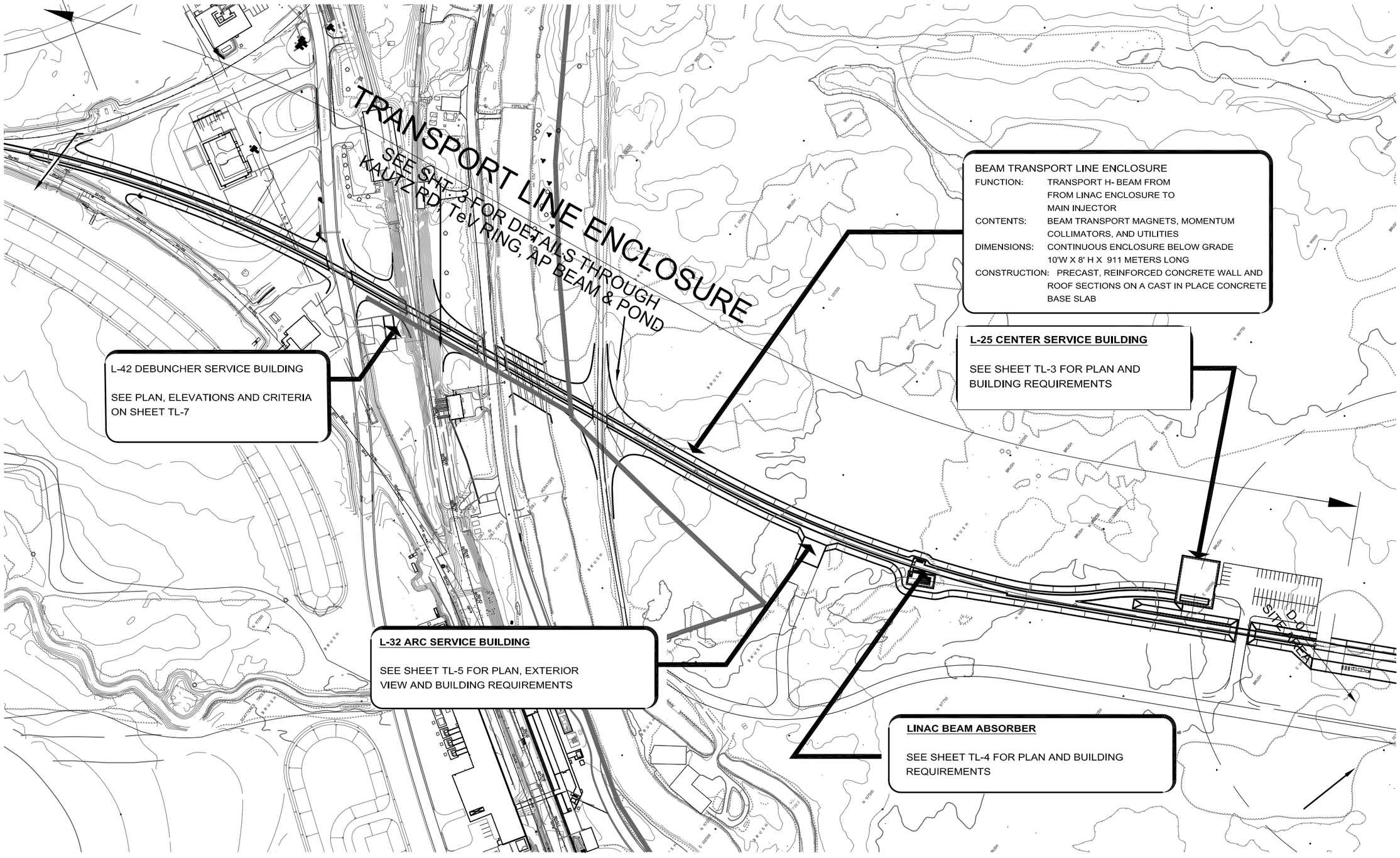
L-12 CRYO BUILDING

EXTERIOR VIEW

PROJ. NO. 4-2-1

DATE: 20 JAN, 2006

DRWG. NO. L12-3



1" = 200'-0"

200 0 200 400

SCALE FEET

FERMI NATIONAL ACCELERATOR LABORATORY

PROTON DRIVER

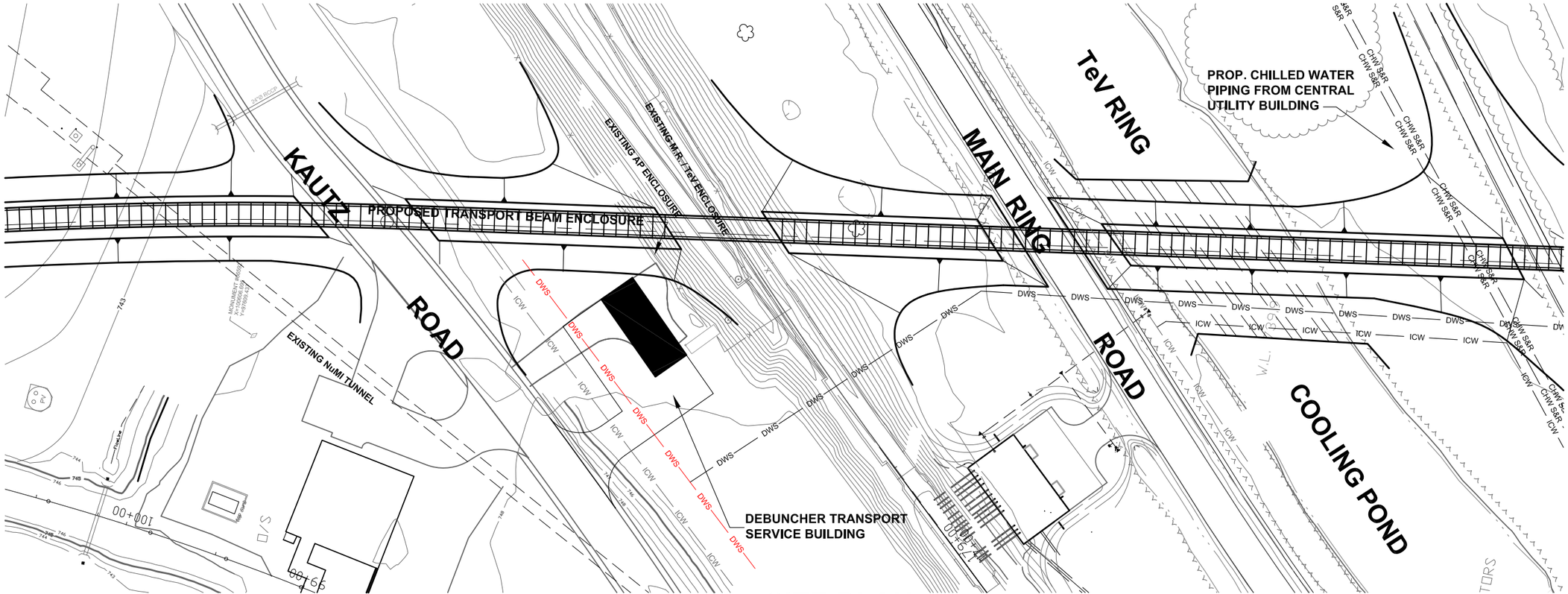
TRANSPORT LINE REGION

KEY PLAN OF TRANSPORT LINE ENCLOSURE

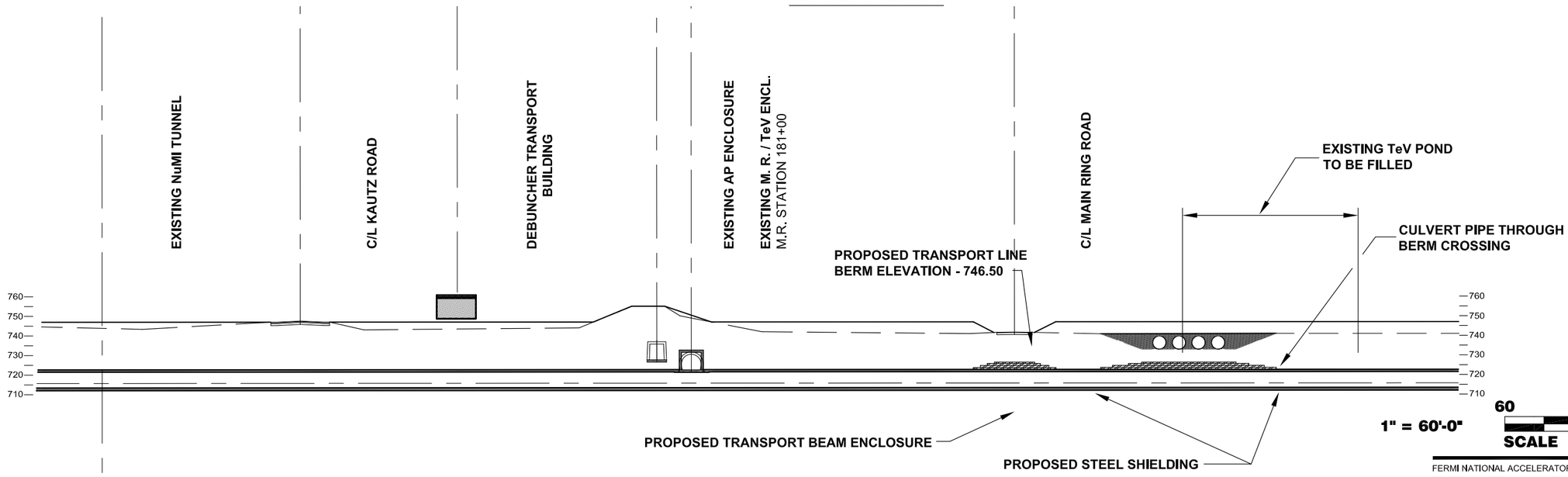
PROJ. NO. 4-2-1

DATE: 20 JAN, 2006

DRWG. NO. TL-1



SITE PLAN



PROFILE

1" = 60'-0"

60 0 60 120

SCALE FEET

FERMI NATIONAL ACCELERATOR LABORATORY

PROTON DRIVER

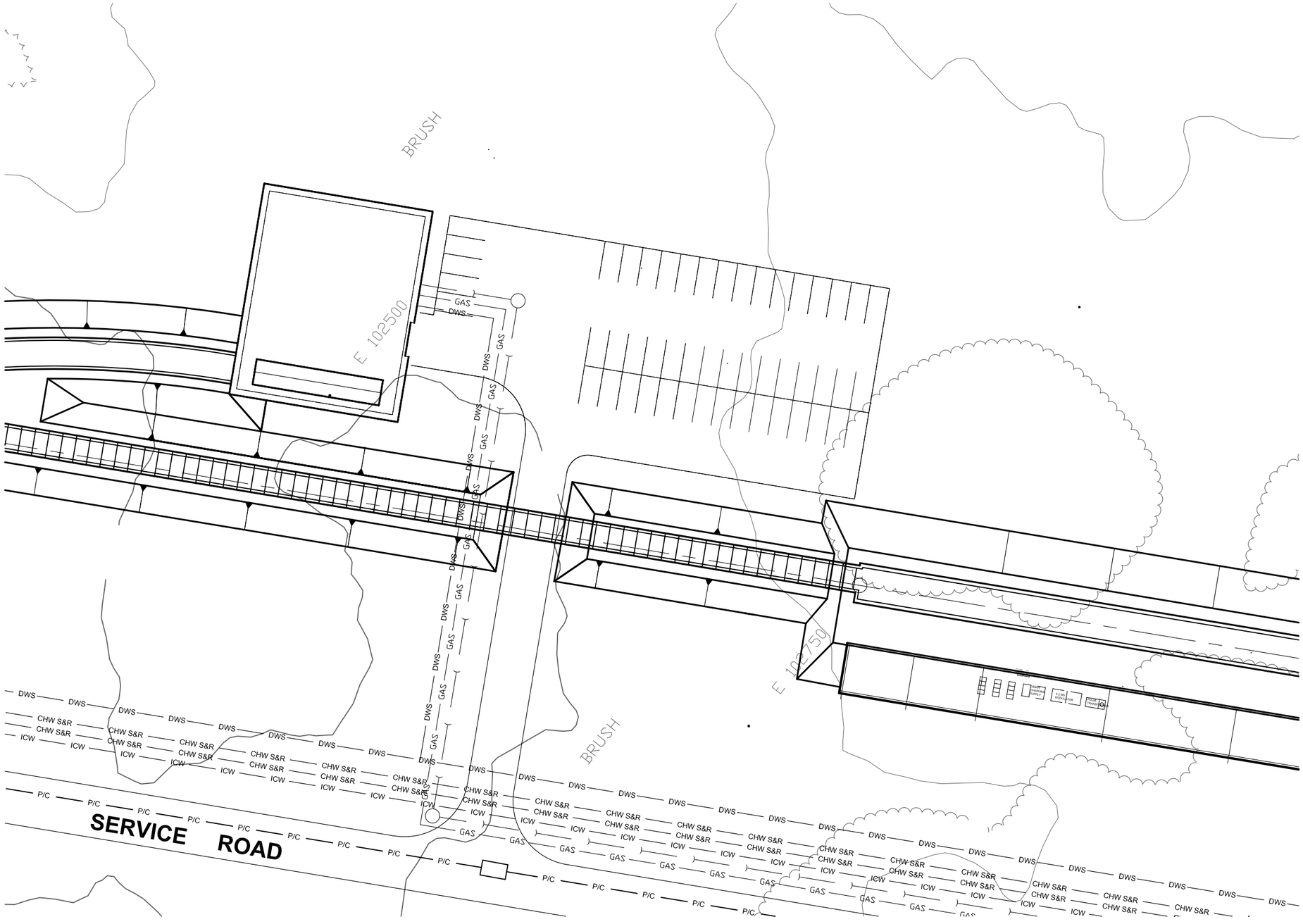
TRANSPORT LINE ENCLOSURE

TRANSPORT LINE ENCLOSURE SECTIONS

PROJ. NO. 4-2-1

DATE: 20 JAN, 2006

DRWG. NO. TL-2



L-25 CENTER SERVICE BUILDING

FUNCTION:
PERSONNEL/EQUIPMENT ACCESS FO INSTALLATION OF LINAC

CONTENTS:
CRANE BAY, HATCH AND STAGING AREA

DIMENSIONS:
HIGH BAY 80' X 100' X 24' CLEAR HEIGHT

CONSTRUCTION:
NON-COMBUSTIBLE, INSULATED METAL SIDING ON STEEL FRAME W/ BUILT UP ROOF & CONC. FLRS.

1" = 50'-0"

50 0 50 100
SCALE FEET

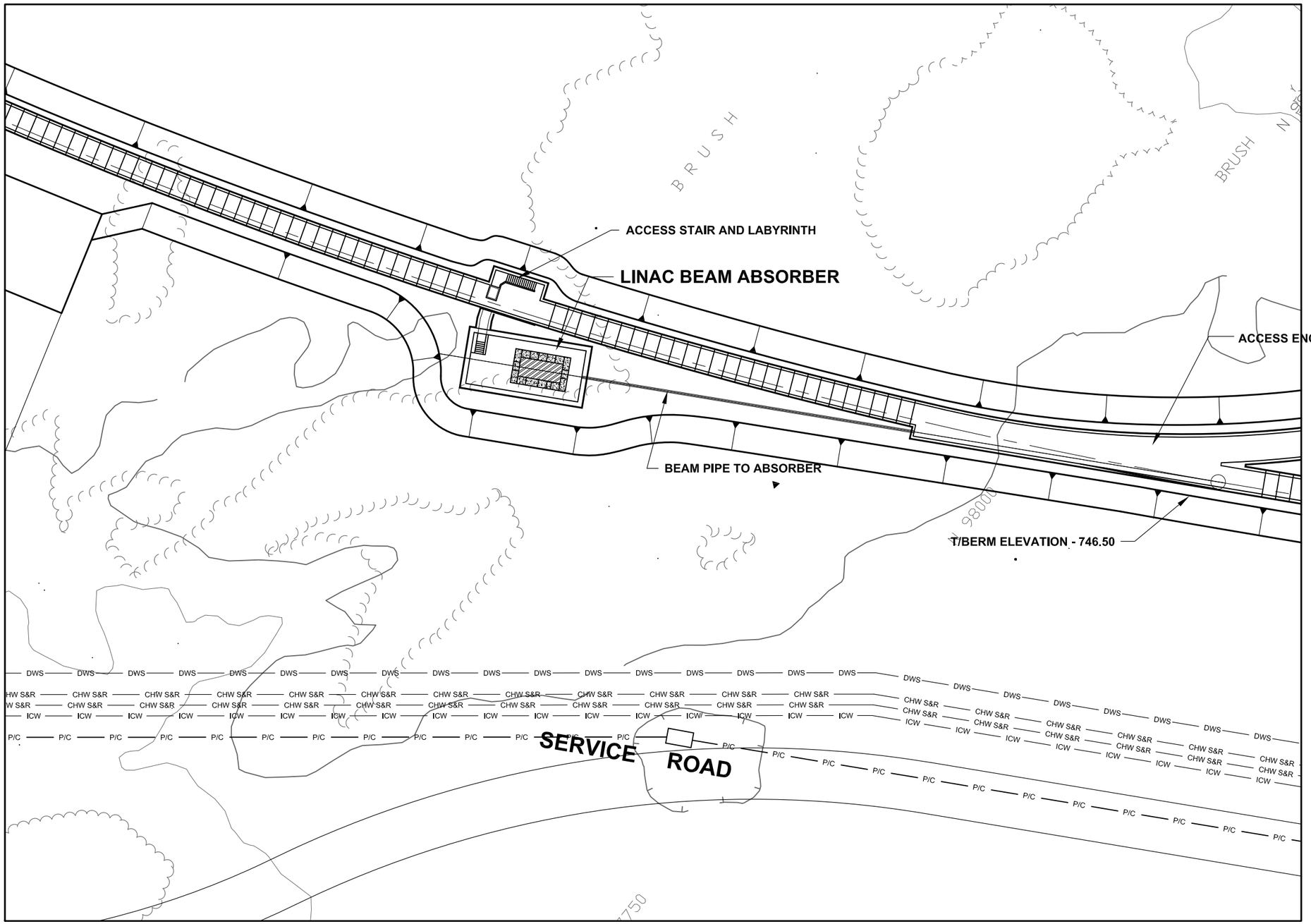
FERMI NATIONAL ACCELERATOR LABORATORY

PROTON DRIVER

TRANSPORT LINE REGION

PLAN OF L-25

PROJ. NO. 4-2-1
DATE: 20 JAN, 2006
DRWG. NO. TL-3



LINAC BEAM ABSORBER

FUNCTION:
BELOW GRADE EQUIPMENT/CONTROLS ENCLOSURE FOR LINAC H-MINUS ABORT COMPONENTS

CONTENTS:
CONCRETE BLOCK AND STEEL SHIELDING & UTILITIES FOR LINAC ABORT SYSTEM

DIMENSIONS:
CONCRETE ENCLOSURE BELOW GRADE
23'W X 18' H X 52' LONG CONSTRUCTION:
CAST IN PLACE, REINFORCED CONCRETE

1" = 50'-0"

50 0 50 100
SCALE FEET

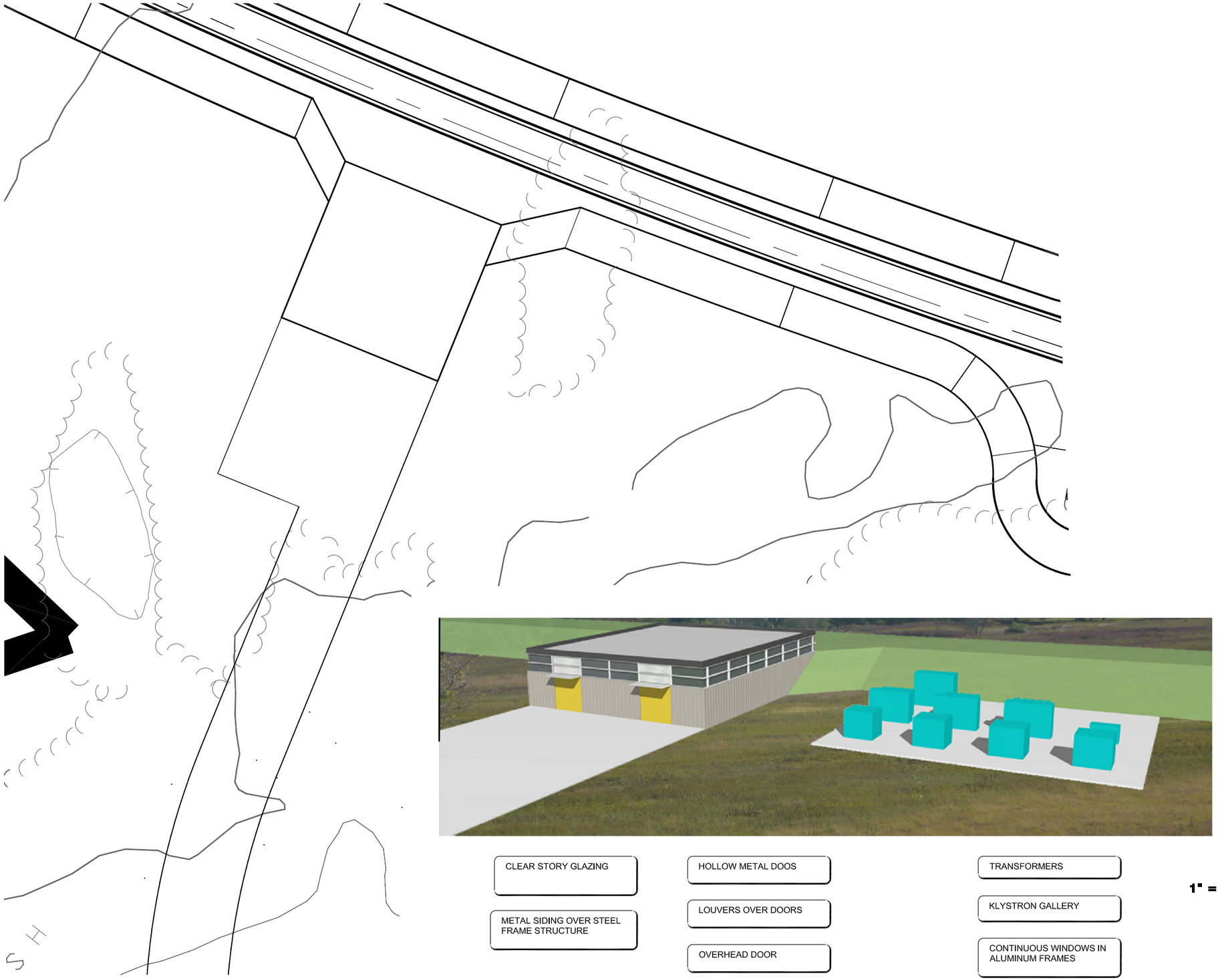
FERMI NATIONAL ACCELERATOR LABORATORY

PROTON DRIVER

TRANSPORT LINE REGION

PLAN OF LINAC BEAM ABSORBER

PROJ. NO. 4-2-1
DATE: 20 JAN, 2006
DRWG. NO. TL-4



CLEAR STORY GLAZING

METAL SIDING OVER STEEL FRAME STRUCTURE

HOLLOW METAL DOOS

LOUVERS OVER DOORS

OVERHEAD DOOR

TRANSFORMERS

KLYSTRON GALLERY

CONTINUOUS WINDOWS IN ALUMINUM FRAMES

L-32 ARC SERVICE BUILDING

FUNCTION:
EQUIPMENT ENCLOSURE FOR CORRECTION POWER SUPPLIES AND CONTROLS

CONTENTS:
POWER SUPPLIES AND CONTROLS

DIMENSIONS:
50' X 50' X 10' CLEAR HEIGHT CONSTRUCTION: NON-COMBUSTIBLE, INSULATED METAL SIDING ON STEEL FRAME W/ BUILT UP ROOF AND CONCRETE FLOORS

1" = 30'-0"

30 0 30 60

SCALE FEET

FERMI NATIONAL ACCELERATOR LABORATORY

PROTON DRIVER

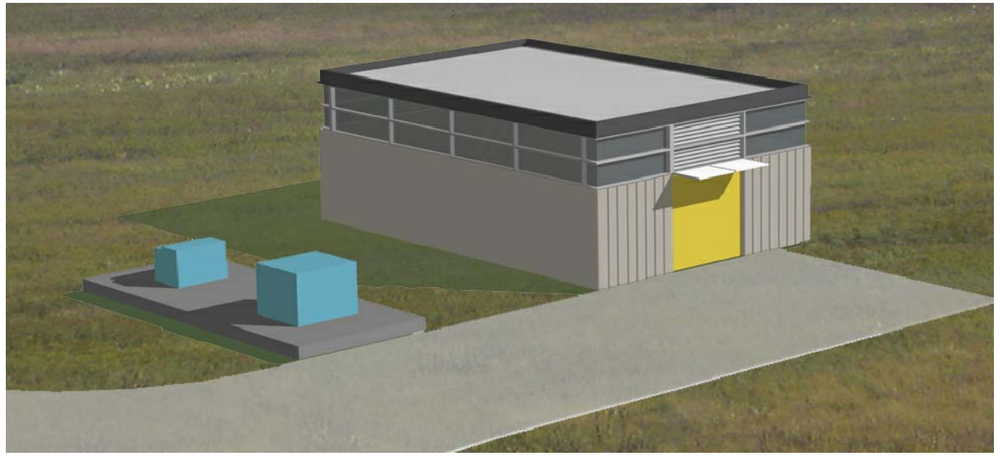
TRANSPORT LINE REGION

L-32 ARC SERVICE BUILDING PLAN AND EXTERIOR VIEW

PROJ. NO. 4-2-1

DATE: 20 JAN, 2006

DRWG. NO. TL-5



L-42 DEBUNCHER SERVICE BUILDING

FUNCTION:
EQUIPMENT ENCLOSURE FOR DEBUNCHER RF MODULATOR AND KLYSTRON, MAGNET POWER SUPPLIES AND CONTROLS

CONTENTS:
KLYSTRON, MODULATOR, MAGNET POWER SUPPLIES AND CONTROLS

DIMENSIONS:
20' X 50' X 10' CLEAR HEIGHT CONSTRUCTION: NON-COMBUSTIBLE, INSULATED METAL SIDING ON STEEL FRAME W/ BUILT UP ROOF AND CONCRETE FLOORS

1" = 20'-0"

20 0 20 40
SCALE FEET

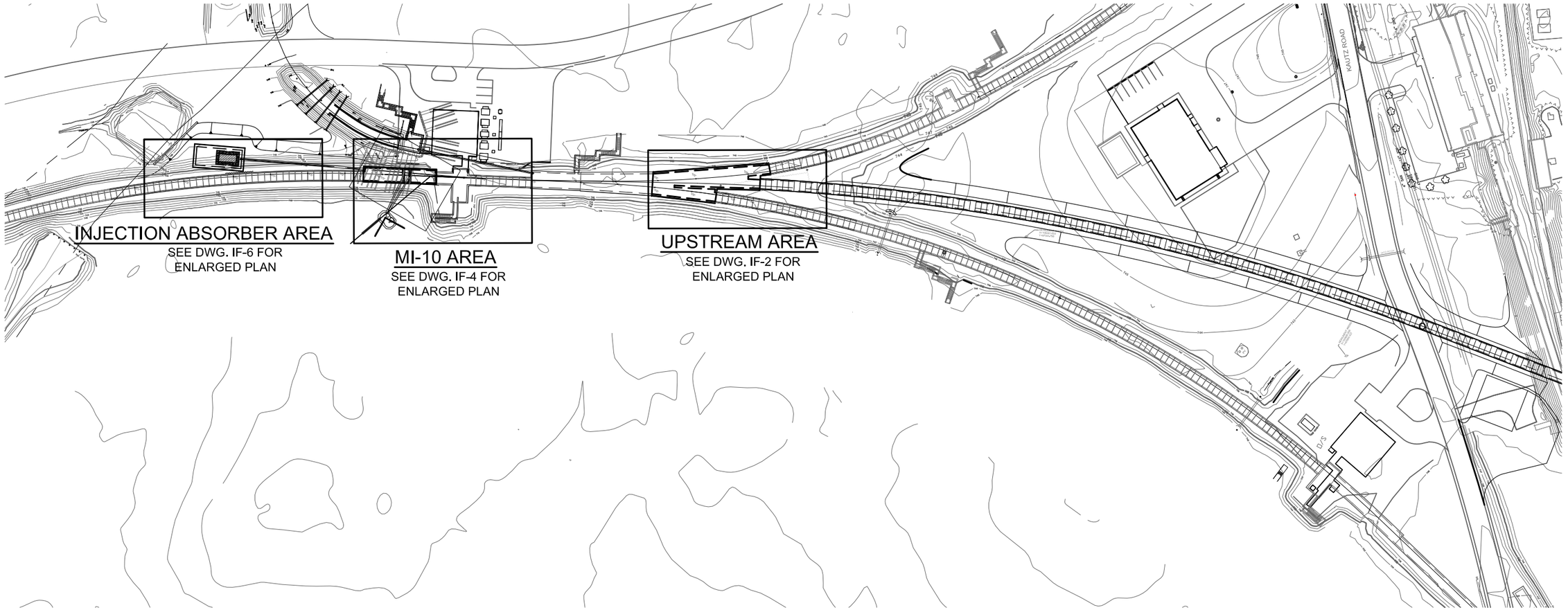
FERMI NATIONAL ACCELERATOR LABORATORY

PROTON DRIVER

TRANSPORT LINE REGION

L-42 DEBUNCHER BUILDING PLAN AND EXTERIOR VIEW

PROJ. NO. 4-2-1
DATE: 20 JAN, 2006
DRWG. NO. TL-7



PLAN - MAIN INJECTOR INTERFACE REGION

FERMI NATIONAL ACCELERATOR LABORATORY

PROTON DRIVER

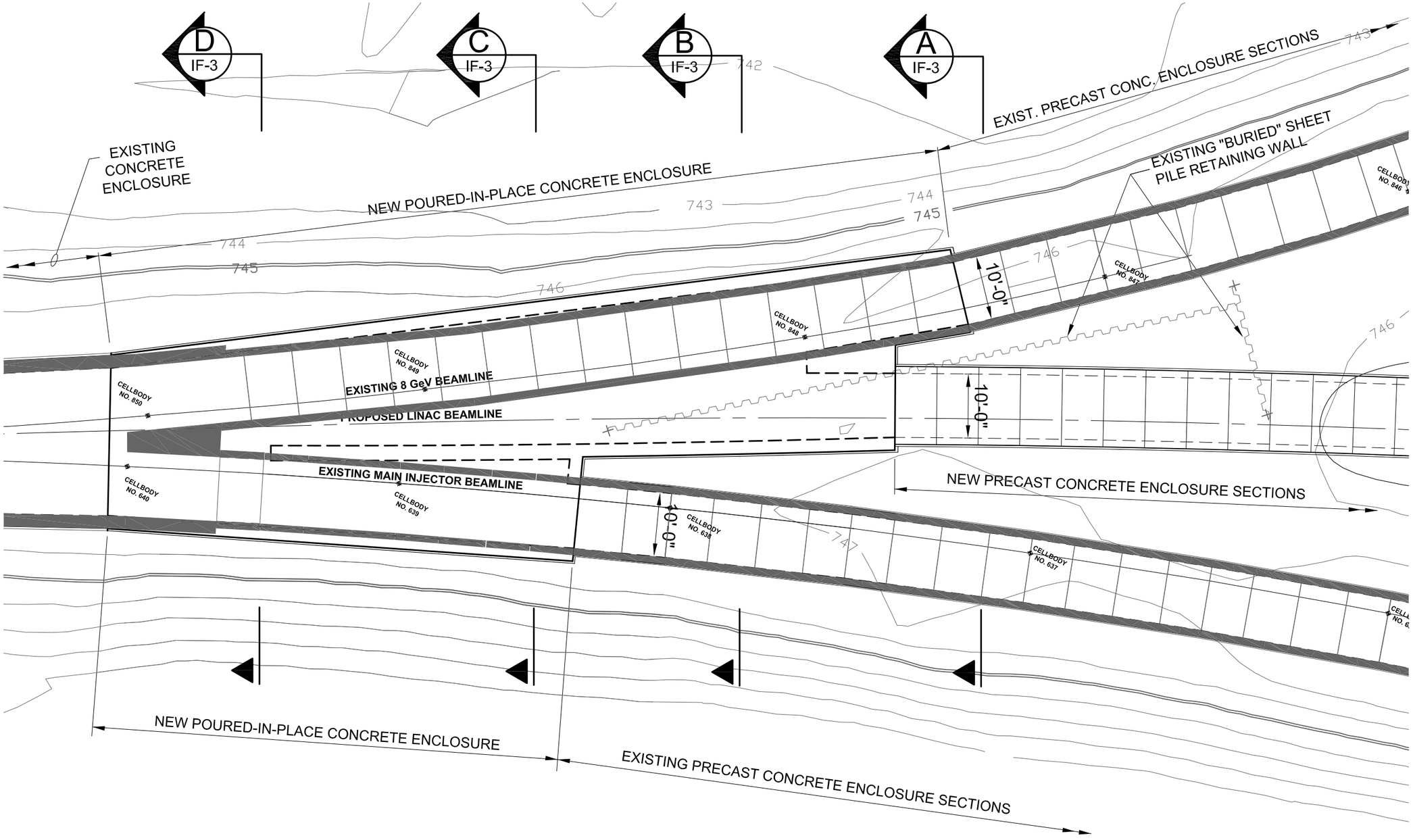
MAIN INJECTOR INTERFACE REGION

KEY PLAN OF MAIN INJECTOR INTERFACE REGION

PROJ. NO. 4-2-1

DATE: 20 JAN, 2006

DRWG. NO. IF-1



ENLARGED PLAN AT UPSTREAM AREA

FERMI NATIONAL ACCELERATOR LABORATORY

PROTON DRIVER

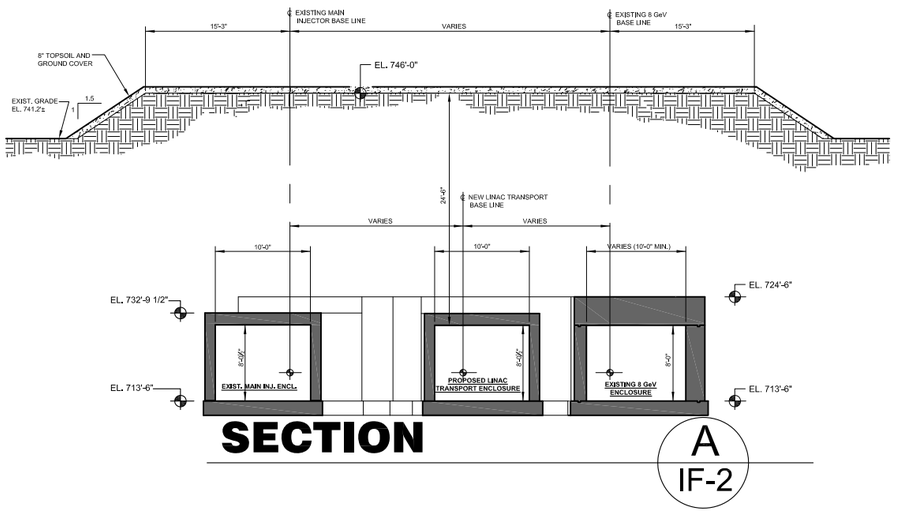
MAIN INJECTOR INTERFACE REGION

ENLARGED PLAN AT UPSTREAM AREA

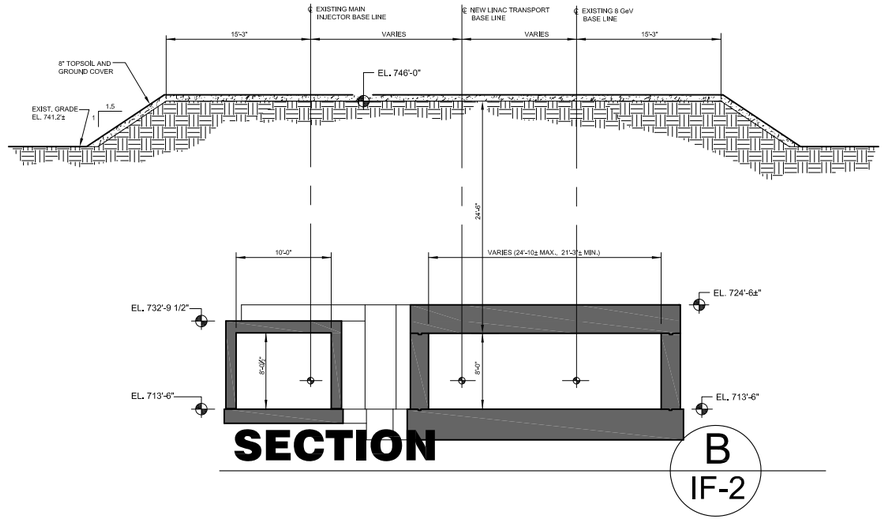
PROJ. NO. 4-2-1

DATE: 20 JAN, 2006

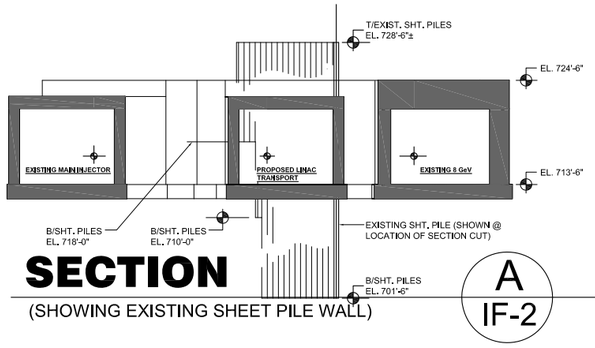
DRWG. NO. IF-2



SECTION A IF-2

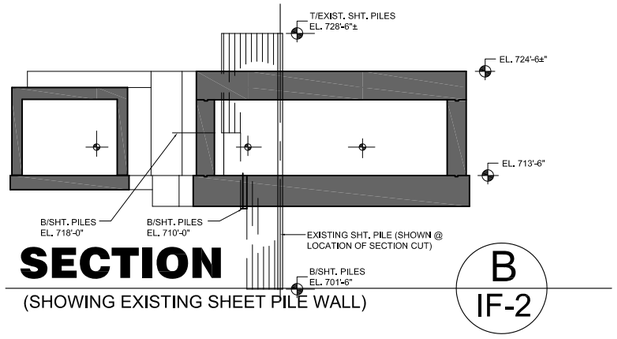


SECTION B IF-2



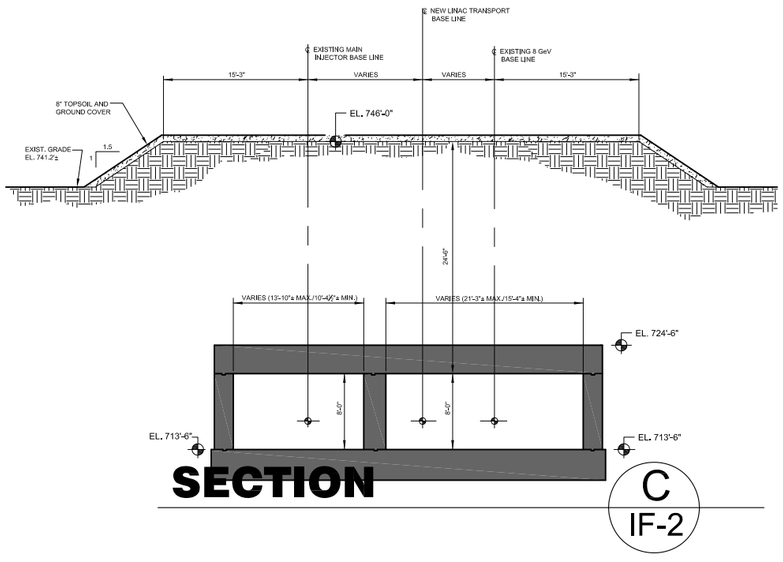
SECTION A IF-2

(SHOWING EXISTING SHEET PILE WALL)

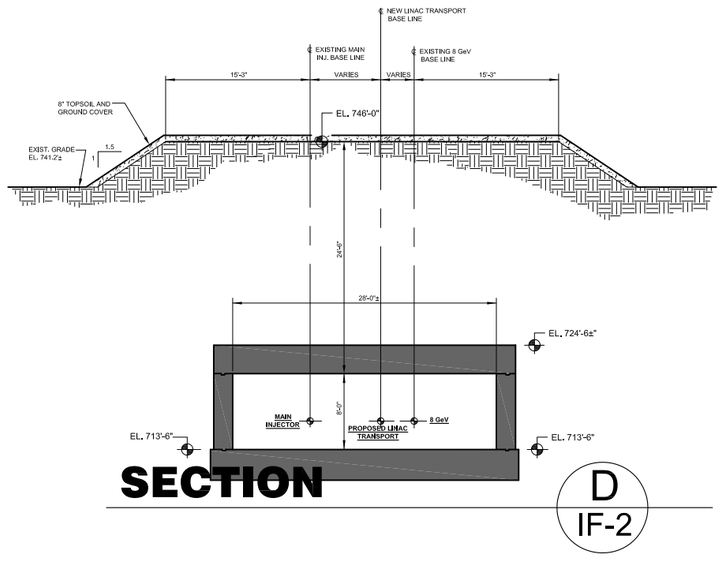


SECTION B IF-2

(SHOWING EXISTING SHEET PILE WALL)



SECTION C IF-2



SECTION D IF-2

FERMI NATIONAL ACCELERATOR LABORATORY

PROTON DRIVER

MAIN INJECTOR INTERFACE REGION

SECTIONS AT UPSTREAM AREA

PROJ. NO. 4-2-1

DATE: 20 JAN, 2006

DRWG. NO. IF-3

8 GeV BEAMLINE ENCLOSURE

EXISTING 8 GeV BEAMLINE

EXIST. RET. WALL SYS. FROM PREV. CONSTR.

MI-10 SERVICE BUILDING

ELECTRICAL SUBSTATION

ELECTRICAL SUBSTATION

24"Ø PIPE TO ABSORBER

EXISTING CONSTRUCTION

EXISTING MAIN INJECTOR BEAMLINE

TWO CONC. ENCASED BANKS,
EA. W/FOUR 6"Ø PVC PIPES

TRANSIT LINE

MI-11 VAULT
(FLOOR @ EL. 722'-8"±)

21"Ø STEEL PIPE
TO VAULT MI-21

N: 97,196.72

E: 99,578.88

ENLARGED PLAN AT MI-10 AREA

FERMI NATIONAL ACCELERATOR LABORATORY

PROTON DRIVER

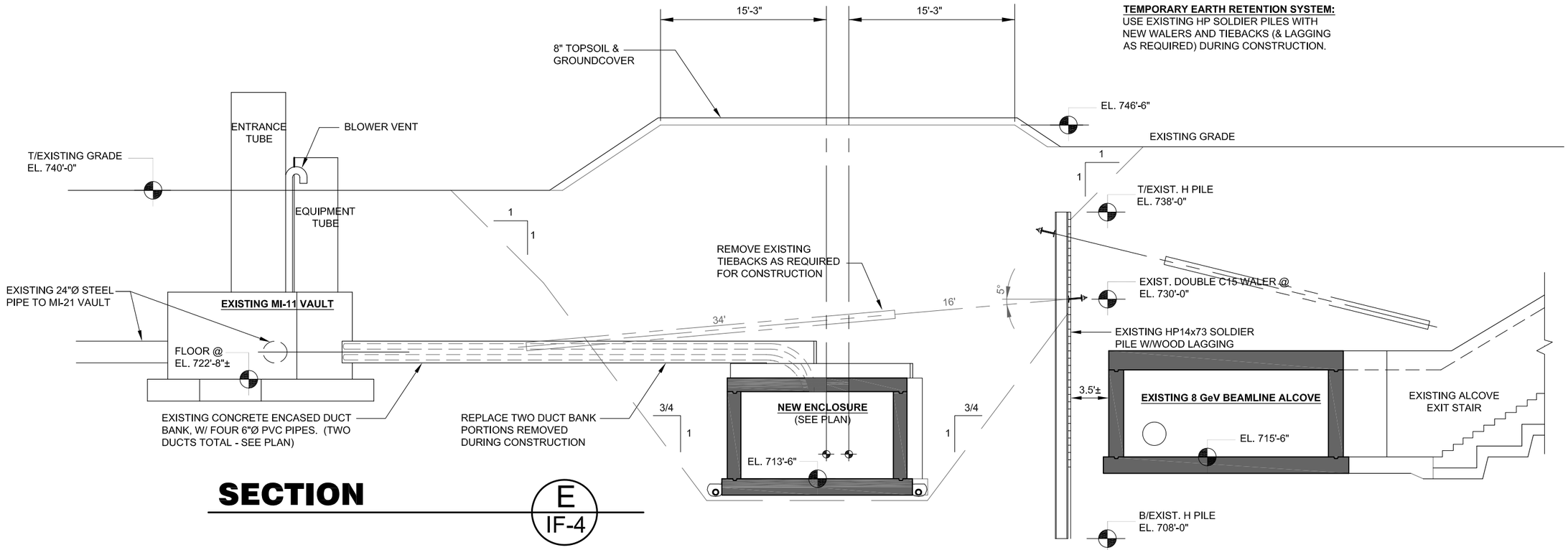
MAIN INJECTOR INTERFACE REGION

ENLARGED PLAN AT MI-10 AREA

PROJ. NO. 4-2-1

DATE: 20 JAN, 2006

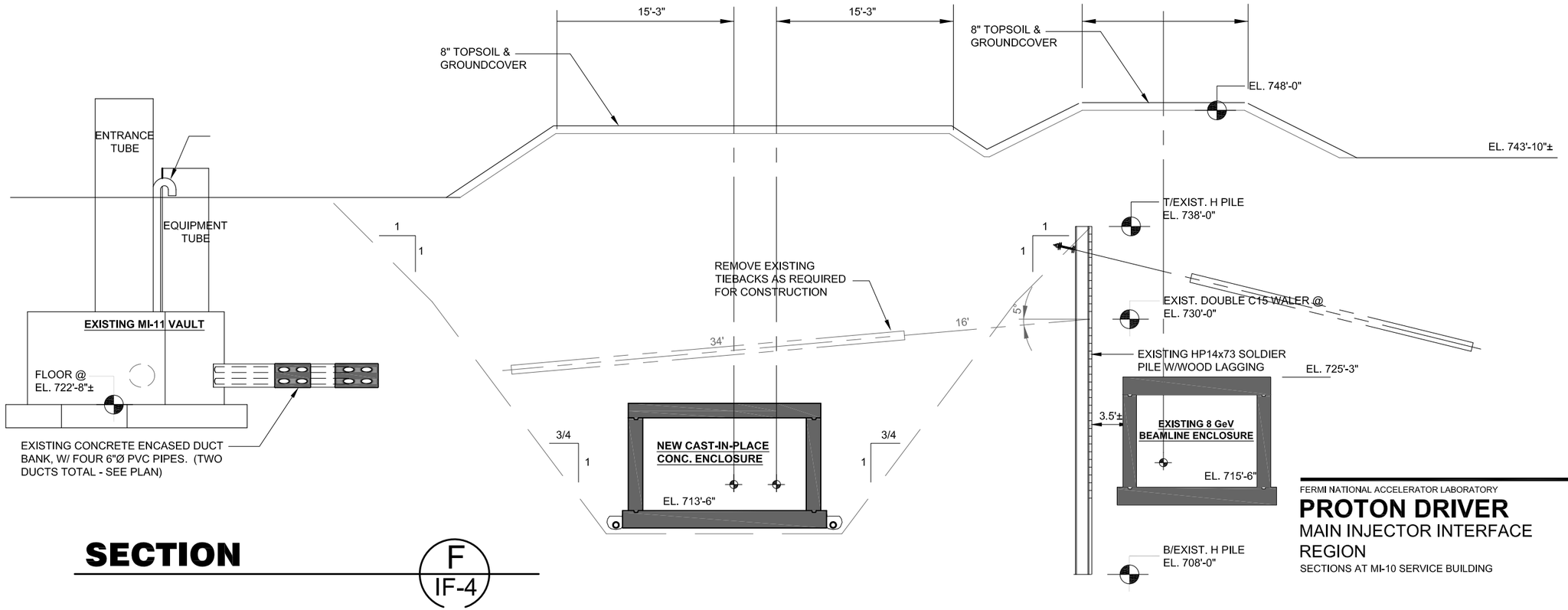
DRWG. NO. IF-4



TEMPORARY EARTH RETENTION SYSTEM:
USE EXISTING HP SOLDIER PILES WITH NEW WALERS AND TIEBACKS (& LAGGING AS REQUIRED) DURING CONSTRUCTION.

SECTION

E
IF-4



SECTION

F
IF-4

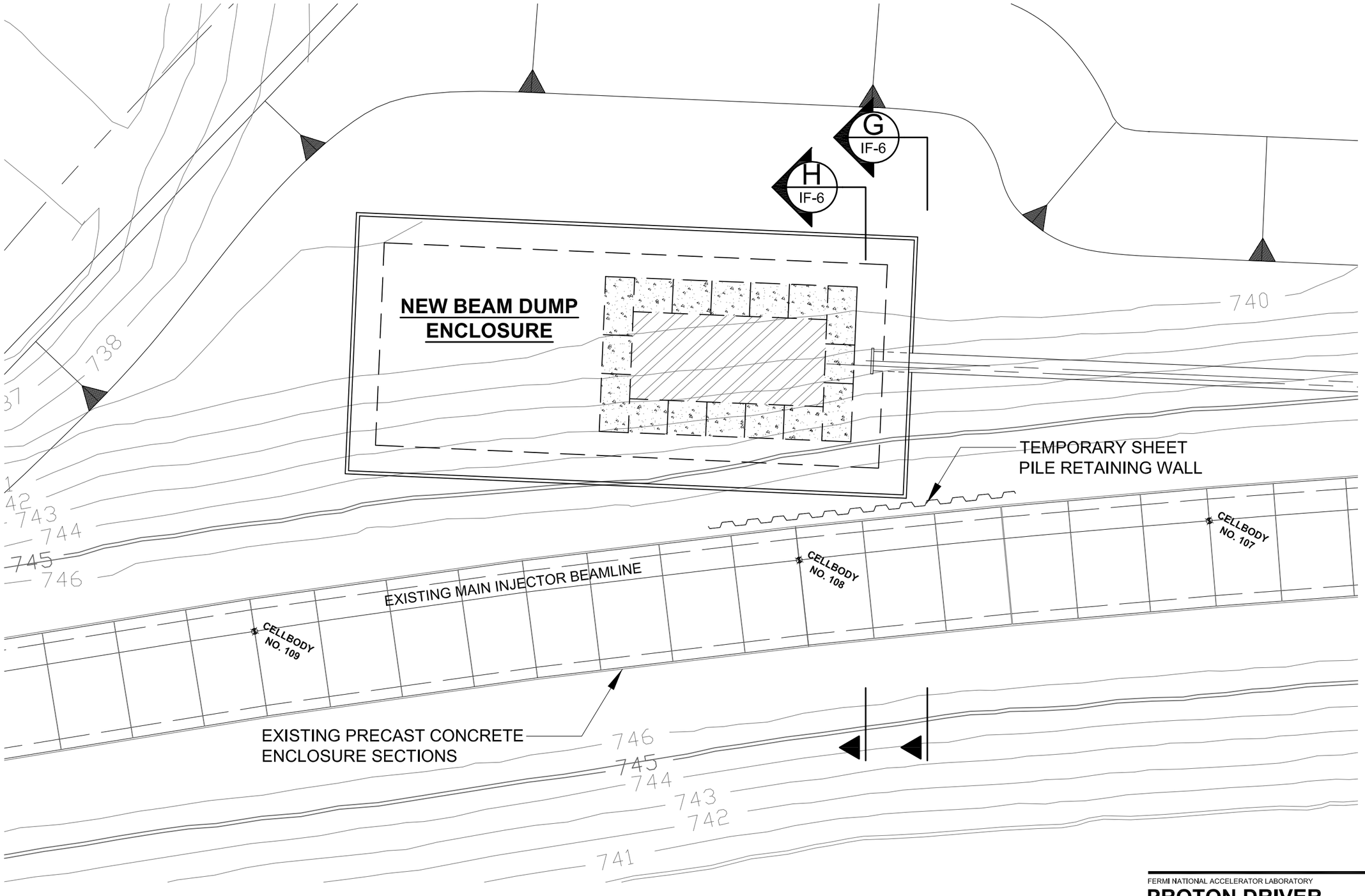
FERMI NATIONAL ACCELERATOR LABORATORY

PROTON DRIVER

MAIN INJECTOR INTERFACE REGION

SECTIONS AT MI-10 SERVICE BUILDING

PROJ. NO. 4-2-1
DATE: 20 JAN, 2006
DRWG. NO. IF-5



ENLARGED PLAN AT INJECTION ABSORBER AREA

FERMI NATIONAL ACCELERATOR LABORATORY

PROTON DRIVER

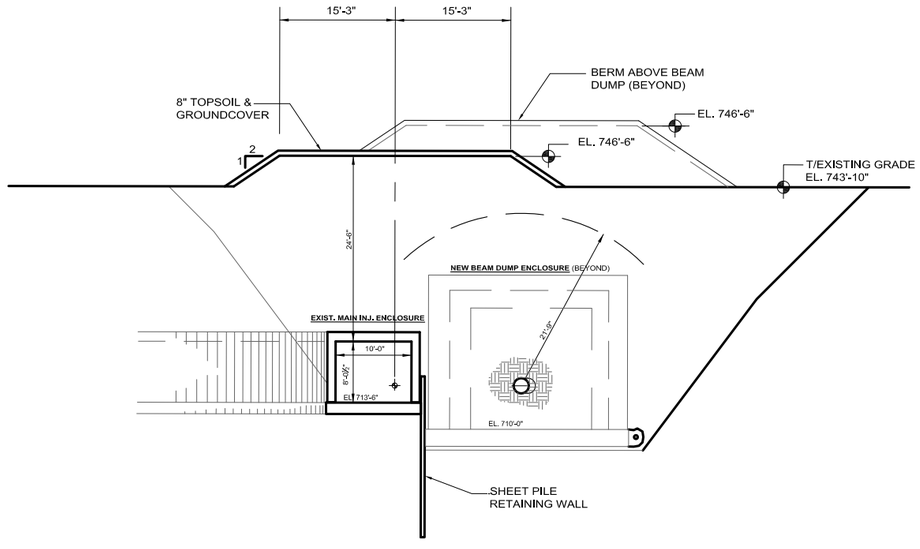
MAIN INJECTOR INTERFACE REGION

ENLARGED PLAN AT INJECTION ABSORBER AREA

PROJ. NO. 4-2-1

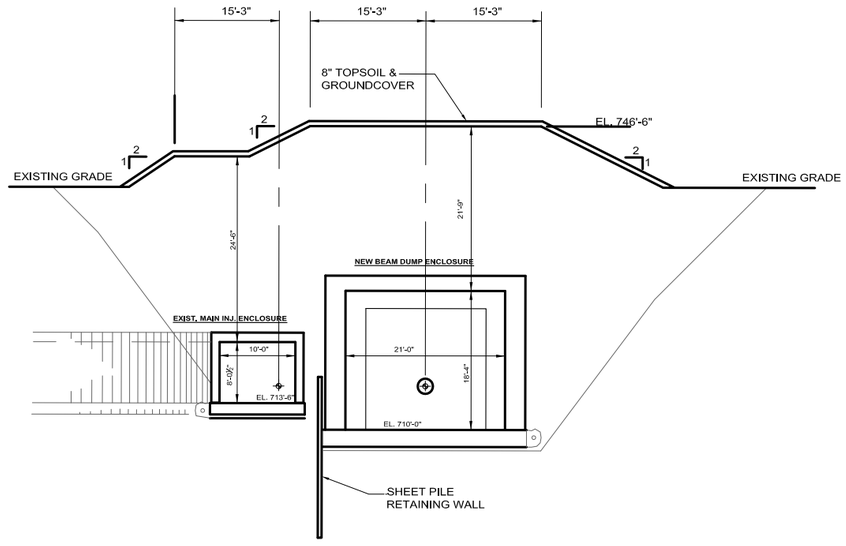
DATE: 20 JAN, 2006

DRWG. NO. IF-6



SECTION

G
IF-6



SECTION

H
IF-6

FERMI NATIONAL ACCELERATOR LABORATORY

PROTON DRIVER

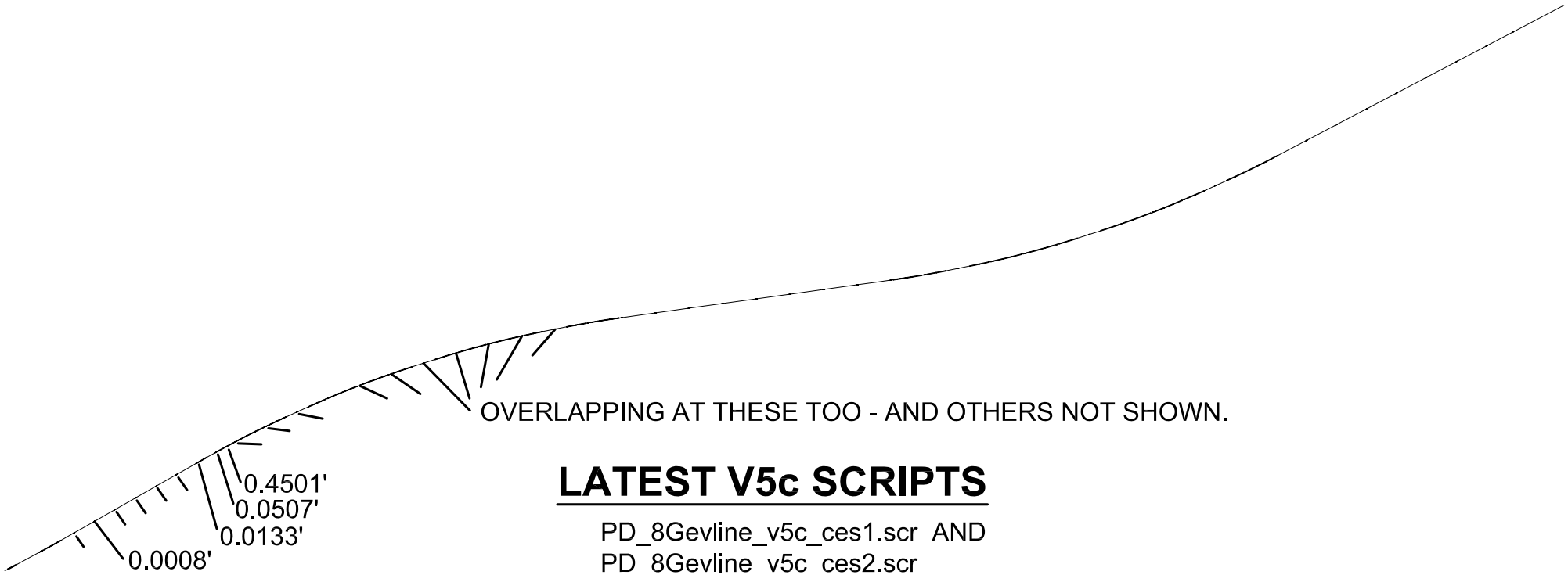
MAIN INJECTOR INTERFACE REGION

SECTIONS AT INJECTOR ABSORBER AREA

PROJ. NO. 4-2-1

DATE: 20 JAN, 2006

DRWG. NO. IF-7



LATEST V5c SCRIPTS

PD_8Gevline_v5c_ces1.scr AND
PD_8Gevline_v5c_ces2.scr

THE DIMENSIONS SHOWN ABOVE ARE AN EXAMPLE OF THE OVERLAPPING OF SOME COMPONENTS FROM "PD_8Gevline_v5c_ces2.scr". MOST OF THE OVERLAPPING IS AT THE QNew_2's, BUT SOME ARE ALSO AT THE B2's (AND MAYBE THE B2W's ?????)

MARCH 21, 2006